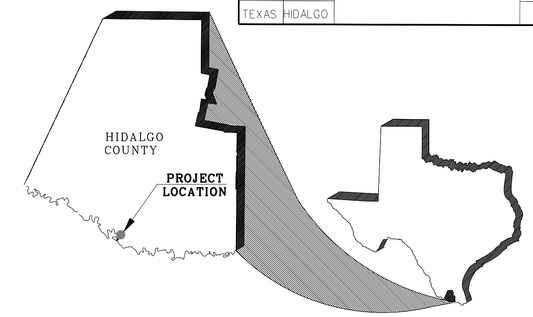
DRAWN BY: DAI	DATE: 08/07/2009		
CHECKED BY: SLT	DATE:	S&B PROJECT NO: U0450.512	
APPROVED BY: SLT	DATE:		
STATE	COUNTY		SHEET NO.
TEXAS	HIDALGO		1

UNITED STATES SECTION
INTERNATIONAL BOUNDARY AND WATER COMMISSION

AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009
LOWER RIO GRANDE FLOOD CONTROL PROJECT

REHABILITATION OF HIDALGO PROTECTIVE LEVEE (PHASE I) AND BANKER FLOODWAY - SOUTH LEVEE

FROM APPROXIMATELY 0.8 MILE SOUTH OF THE COMMON LEVEE TO THE COMMON LEVEE
AND
FROM COMMON LEVEE TO SPUR 115
HIDALGO COUNTY, TEXAS



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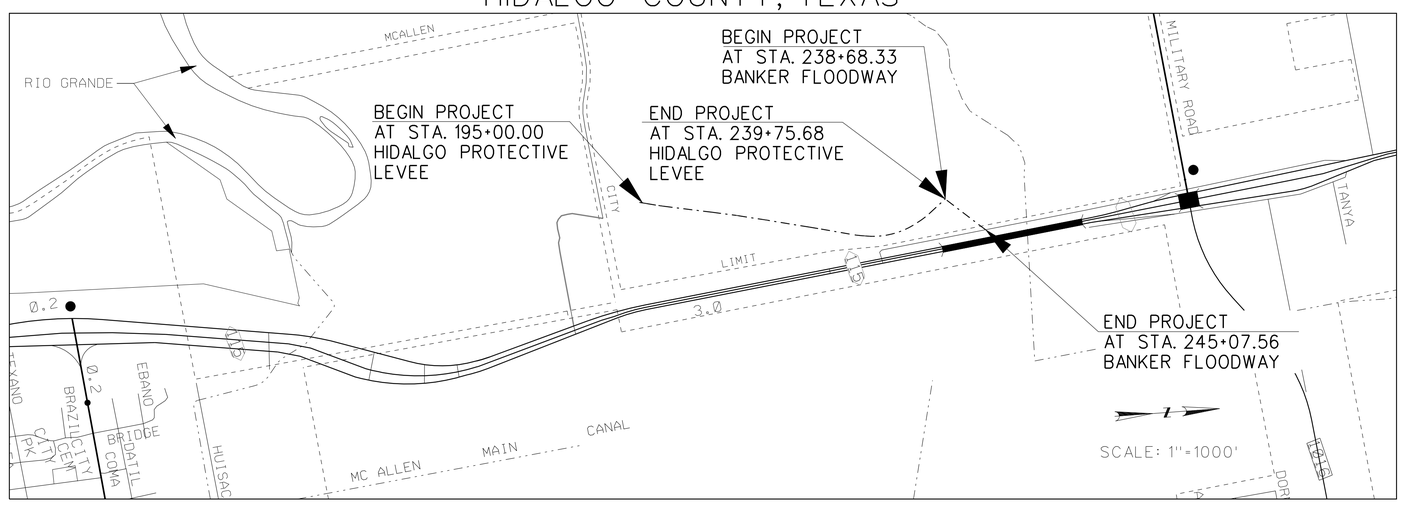
1	TITLE SHEET
2 – 2A	PROJECT LAYOUT
3	GENERAL NOTES & SPECIFICATION DATA
4	ESTIMATE OF QUANTITIES
5 – 5A	SUMMARY OF QUANTITIES
6, 6A – 6B	TYPICAL SECTIONS
7 – 7A	ALIGNMENT DATA
8, 8A – 8H	PLAN & PROFILES
9, 9A – 9DD	PROPOSED CROSS SECTIONS
10	STRUCTURE DETAILS-CROSSECTION
11, 11A – 11C	STANDARDS



VICINITY MAP

PLANS PREPARED BY

S&B INFRASTRUCTURE, LTD.
ENGINEERING MANAGEMENT TECHNOLOGY
TEXAS PROFESSIONAL ENGINEERING FIRM REGISTRATION NO. 1582

DANIEL O. RIOS, P.E., PROJECT MANAGER

SUBMITTED FOR LETTING:

SHARLOTTE LYNNE TEAGUE, P.E.
DEPUTY PROJECT MANAGER /TASK ORDER MANAGER

DATE: 8-12-2009

FINAL PLAN DATA:

FINAL CONTRACT PRICE: _____
CONTRACTOR'S NAME: _____
CONTRACTOR ADDRESS: _____
LETTING DATE: _____
DATE WORK BEGAN: _____
DATE WORK COMPLETED: _____
DATE OF ACCEPTANCE: _____

CHANGE ORDERS:

U.S. SECTION INTERNATIONAL BOUNDARY & WATER COMMISSION

RECOMMENDED FOR LETTING : _____ DATE : _____
RAYMUNDO AGUIRRE, PhD, P.E.
PROJECT MANAGER

APPROVED FOR LETTING : _____ DATE : _____
JOSE ARTURO NUNEZ, P.E.
DIVISION ENGINEER, ENGINEERING SERVICES DIVISION

APPROVED FOR LETTING : _____ DATE : _____
C.W. "BILL" RUTH, P.E.
ACTING COMMISSIONER

REHABILITATION OF HIDALGO PROTECTIVE LEVEE (PHASE I) AND BANKER FLOODWAY - SOUTH LEVEE

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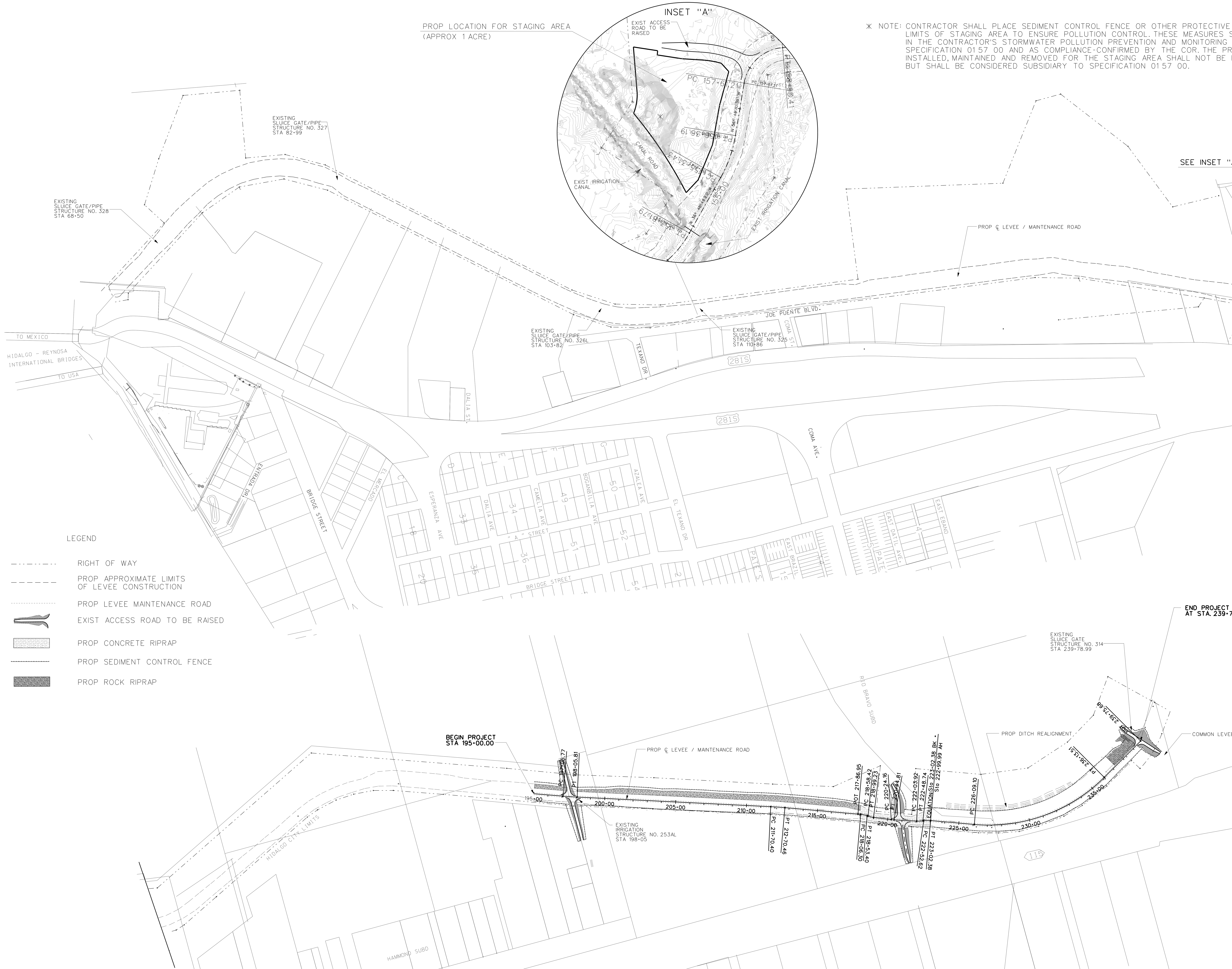
⁎ NOTE: CONTRACTOR SHALL PLACE SEDIMENT CONTROL FENCE OR OTHER PROTECTIVE MEASURE AROUND LIMITS OF STAGING AREA TO ENSURE POLLUTION CONTROL. THESE MEASURES SHALL BE IDENTIFIED IN THE CONTRACTOR'S STORMWATER POLLUTION PREVENTION AND MONITORING PLAN AS PER SPECIFICATION 01 57 00 AND AS COMPLIANCE-CONFIRMED BY THE COR. THE PROTECTIVE MEASURES INSTALLED, MAINTAINED AND REMOVED FOR THE STAGING AREA SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO SPECIFICATION 01 57 00.



LEGEND

- RIGHT OF WAY
- PROP APPROXIMATE LIMITS OF LEVEE CONSTRUCTION
- PROP LEVEE MAINTENANCE ROAD
- EXIST ACCESS ROAD TO BE RAISED
- PROP CONCRETE RIPRAP
- PROP SEDIMENT CONTROL FENCE
- PROP ROCK RIPRAP

STATE OF TEXAS
SHARLOTTE LYNNE TEAGUE
62160
REGISTERED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by SHARLOTTE LYNNE TEAGUE P.E. 62160, on 6-20, 20 09

S&B INFRASTRUCTURE, LTD.
ENGINEERING MANAGEMENT TECHNOLOGY
TEXAS PROFESSIONAL ENGINEERING FIRM REGISTRATION NO. 1582

INTERNATIONAL BOUNDARY AND WATER COMMISSION
COMISION INTERNACIONAL DE LIMITES Y AGUAS

PROJECT LAYOUT

HIDALGO PROTECTIVE LEVEE
STA. 195+00.00 TO STA 239+75.68

SHEET 1 OF 2

STATE	COUNTY	DRAWN BY: B.E.	CHECKED BY: S.L.T.	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				2

7/20/2007
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NOTES:

PLANIMETRIC INFORMATION WAS OBTAINED FROM FIELD SURVEYS CONDUCTED BY RODS SURVEYING, INC.

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)

S&B INFRASTRUCTURE, LTD.

Engineering Management Technology

S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by DANIEL GARCES P.E. 100029, on 8-12, 20 09.

PROJECT LAYOUT
BANKER FLOODWAY - SOUTH LEVEE
STA. 238+68.33 TO STA. 245+07.56

SHEET 2 OF 2

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.	IBM09T0018	SHEET NO.
REHABILITATION OF BANKER FLOODWAY SOUTH LEVEE				2A

8/13/2009

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ITEM 01 57. TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENTAL CONTROLS

Temporary sediment controls are identified at various locations, and may be adjusted in the field as directed or approved by the COR.

ITEM 31 11. PREPARING RIGHT OF WAY

The COR shall designate features that are for preservation.

Various signs are located throughout the project limits. the contractor shall remove, temporarily store and relocate each sign (shown/not shown within the plans) as directed by the engineer. COR this work is considered subsidiary to Item 31 11 01 Prep Right of Way.

ITEM 31 14. REMOVE / STOCKPILE EXISTING MATERIALS

The Contractor shall only place stockpiles in Staging Areas, unless otherwise approved by the COR.

ITEM 31 92. SEEDING FOR EROSION CONTROL

During drill seeding operations, application methods shall be in accordance with the standard specification requirements.

SS-1 Tracking Agent shall be a ratio of 2:1, two (Emulsion) to one (water) and applied at a rate of 0.05 gallons per square yard. The SS-1 Tracking Agent required for Drill Seed operations, will not be paid for directly, but will be subsidiary to this Item. Watering shall not be used with the Drill Seed Method.

Cool Season or Warm Season Grasses shall be included as part of Item 31 92 (See Table 3 and/or Table 4 in the Standard Specification Manual for dates and seed type).

Watering rates for seeding 0.25 gal/sy per cycle with 2 cycles per week for the next 3 weeks then 0.25 gal/sy per cycle with 1 cycle per week for the next 2 weeks.

The watering rates are to estimate the amount of watering that might be needed to supplement natural rainfall to keep the soil moist until germination and establishment of seeds and grasses can occur. The Contractor will adjust these rates as directed or approved by the COR to take into account actual field conditions such as rain, soil temperature, soil texture, air temperature, sunny vs. cloudy days, etc. increasing the gals per cycle to decrease the number of cycles per week will not be allowed.

Water shall be applied uniformly over areas after seeding or sodding as shown on plans or directed by the COR. In addition, the Contractor shall be responsible for 70% grass coverage in order to comply with stabilization requirements. Vegetative coverage shall be uniform during this period: water equipment shall be metered and operated under pumping pressure cable of delivering the required quantities of water necessary. Water shall be applied in such a manner as to ensure adequate moisture and be maintained on the grass seeding and soil in place.

Upon establishment of 70% vegatative coverage, as determined by the COR, the Engineer shall have the option to require the Contractor to continue watering as specified for a period not to exceed 30 days. However, rate and frequency may be adjusted, with the approval of the COR, to meet site conditions.

Seed mixture shall be as specified under Item 31 92.

ITEM 35 41. CONSTRUCTION OF LEVEE

The levee and all areas to support fill material shall be stripped of all vegetation and/or organic soil under Item 31 14. The existing caliche shall also be removed / stockpile under Item 31 14.

Upon completion of stripping operations, the exposed subgrades shall be thoroughly proof-rolled in order to locate and densify any weak, compressible zones.

Upon completion of the proof rolling operations and just prior to fill placement, the exposed subgrades shall be moisture conditioned by scarifying to a minimum depth of 6 inches and recompacted to a minimum of 95 percent of the maximum dry density as determined by ASTM D698 "Compaction Test".

The moisture content of the subgrade shall be maintained within the range of optimum moisture content to 3 percentage points above the optimum moisture content until permanently covered.

Borrow material shall be free of roots, vegetation, and other organic or degradable materials.

It is the contractor's responsibility to advise the COR of the location of the borrow source sufficiently in advance to avoid delay.

Finish grading by the Contractor will be required for drainage (as shown and/or as directed by the Engineer, and will be considered subsidiary to Item 35 41

ITEM 35 42. GEOTEXTILE MATERIAL

The Contractor shall use Type 2 Filter Fabric in accordance with DMS-6200 "Filter Fabric".

ITEM 50 20. ROADWAY BASE (FLEXIBLE BASE)

Flexible base materials shall be composed of caliche (argillaceous limestone, calcareous or calcareous clay particles) with or without stone conglomerate gravel, sand, or granular materials, meetings, the specifications of Type E Grade 4 as shown below.

The Contractor may blend base material with another caliche source or with crushed concrete, meeting the requirements for TY "D" materials, provided a minimum of 50 percent caliche is used. The crushed concrete may contain sand or granular materials. Stabilizing additives will not be allowed in the raw crushed concrete base. Acceptance will be under the following conditions:

Condition One: When both components of the blend in their individual stockpiles meet all the physical requirements of this item, then field blending will be allowed.

Condition Two: When only one component of the blend passes the physical requirements of this item, the materials shall be blended through a plant for stockpile testing and approval.

Flexible Base TY E Grade 4 shall conform to the following requirements:

Retained on Sq. Sieve	Percent Retained
2"	0
ϕ"	20-60
No. 4	40-75
No. 40	75-85
Max. PI:	15
Max. Wet Ball PI:	15
Wet Ball Mill Max Amount:	50
Min. Comp. Strength PSI:	150 at 15 PSI lateral pressure

Liquid limit shall be determined by TEX-104-E.

The Wet Ball Test (Tex-116-E) shall be performed and the Plasticity Index of the materials passing the No. 40 sieve shall be determined (Wet Ball PI).

The percent of density as determined by Compaction Ratio (Tex-113-E) for the new Flexible Base shall be a minimum of 95 percent.

The Contractor's attention is called to the fact that certain existing and/or proposed structures may be within the limits of the Flexible Base. It shall be the Contractor's responsibility to perform construction operations without damage to these structures.

For water added under Item 50 20, the sulfate content shall not exceed 3000-ppm and the chloride content shall not exceed 3000-ppm.

ITEM 50 25. HOT MIX ASPHALT CONCRETE PAVEMENT

The Contractor shall exercise diligence in the application of "Tack Coat" to keep from spraying or splattering the traveling public with asphaltic material.

Blading (not to exceed more than 3-ft from the pavement edge) may also be necessary to clean dirt and grass from pavement edges and turnout areas as work under this bid Item. The cost of this blading will not be paid for directly, but shall be considered subsidiary to this bid Item.

This project will require the following minimum aggregate Classification: A.

Lime shall be used as an anti-stripping agent.

All longitudinal joints adjacent to a travel way shall be constructed with a joint maker providing a maximum $\frac{1}{2}$-inch vertical edge and a minimum 6:1 edge taper or as approved by the COR.

The Hamburg Wheel Test requirement for PG 64 binder will be 5,000 passes @ 0.5 inch rut depth.

ITEM 60 20. CONCRETE STRUCTURES

Use membrane curing, Type 2, for concrete curb and gutter.

ITEM 60 64. REINFORCED CONCRETE PIPE

Use tongue and groove pipe where the reinforced concrete pipe (RCP) extends into the subgrade.

The 4-foot depth restriction for heavy equipment passage over pipe structures is voided.

The Contractor will be responsible for any construction damage to existing RCP.

Do not use mortar joints.

All RCP shall include rubber gaskets unless shown otherwise on the plans or directed by the COR.

ITEM 60 66. HEADWALLS AND WINGWALLS

Do not use pre-cast headwalls/wingwalls.

ITEM 60 81. POLYVINYL CHLORIDE PIPE

Polyvinyl chloride pipe shall be Schedule 80.

ITEM 60 96. REMOVING OLD STRUCTURES

The structure(s) to be removed may have surface coatings which may contain hazardous materials. The Contractor shall provide for the safety and health of employees and abide by all OSHA standards and regulations.

No concrete or pipe structures to be removed are considered salvageable, and shall be disposed of by the Contractor in accordance with local, state,and federal requirements.

Sludge gates and hardware to be removed shall be determined salvageable or non-salvageable by the COR. Those items deemed salvageable shall be stockpile in the staging area; those items deemed non-salvageable with Local, State, and Federal requirements.

The contractor shall dispose of salvageable sluice gates and hardware at the discreation of the USIBWC.

STATE OF TEXAS
SHARLOTTE LYNNE TEAGUE
62160
REGISTERED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by SHARLOTTE LYNNE TEAGUE P.E. 62160, on 6-20, 20 09

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S&R INFRASTRUCTURE, LTD.
ENGINEERING MANAGEMENT TECHNOLOGY
TEXAS PROFESSIONAL ENGINEERING FIRM REGISTRATION NO. 1582

INTERNATIONAL BOUNDARY AND WATER COMMISSION
COMISION INTERNACIONAL DE LIMITES Y AGUAS

GENERAL NOTES

STATE	COUNTY	DRAWN BY: H.S.	CHECKED BY: S.L.T.	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				3

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E S T I M A T E O F Q U A N T I T I E S

BID ITEM			DESCRIPTION	UNIT	TOTAL	
DIVISION NO.	ITEM No.	DESC CODE			ESTIMATE	FINAL
DIVISION 01 - GENERAL REQUIREMENTS						
01	57	01	TEMP EROSION CONTROL (SILT FENCE)	LF	11,622	
01	57	02	TEMP EROSION CONTROL (CONST EXIT)	EA	320	
01	70	01	MOBILIZATION	LS	1	
DIVISIONS 31/33 - GRADING						
31	11	10	PREP RIGHT OF WAY	STA	53.0	
31	14	01	REMOVE/STOCKPILE (EXIST GRAVEL)	CY	1400	
31	14	02	REMOVE/STOCKPILE (EXIST TOPSOIL) (6 IN)	CY	7403	
31	14	03	REMOVE (ASPHALT)	SY	1027	
31	92	01	SEEDING (PERM)	SY	24,091	
31	92	02	VEGETATIVE WATERING	MG	97.2	
31	92	03	SEEDING (TEMP)	SY	24,091	
33	46	01	PIPE UNDERDRAIN (PVC)	LF	1000	
DIVISION 35 - WATERWAY/MARINE						
35	41	01	RAISE LEVEE (BENCH EXCAV)	CY	47,890	
35	41	02	RAISE LEVEE (EMBANKMENT)	CY	155,183	
35	41	03	RAISE LEVEE (TOPSOIL)	CY	7122	
35	41	04	RAISE LEVEE (CEMENT STAB)	CY	15,990	
35	42	01	RIPRAP (CONCRETE)	CY	780	
35	42	02	RIPRAP (ROCK)	CY	5,932	
35	42	03	GEOTEXTILE FABRIC	SY	16,975	
35	42	04	GEOTEXTILE MEMBRANE	SY	2340	
DIVISION 50 - ROADWAY CONSTRUCTION						
50	11	02	ROADWAY EMBANKMENT (ACCESS ROAD)	CY	11,875	
50	20	01	ROADWAY FLEX BASE (TYE GR 4)	CY	2267	
50	21	01	PRIME OIL (MC-30)	GAL	222	
50	25	01	HOT MIX ASPH SURF (2 IN)	TON	177	
DIVISION 60 - STRUCTURES						
60	64	12	RC PIPE (CL III) (36 IN)	LF	74	
60	67	03	SLOPE END TREAT (36 IN)	EA	2	
60	79	01	ABANDON/PLUG STRUCTURE	CY	3	
60	80	20	PVC PIPE (SCH 80) (12 IN)	LF	260	
60	96	20	REMOVE STR (PIPE)	LF	55	
60	96	21	REMOVE STR (PVC)	LF	260	
60	96	31	REMOVE STR (LOWER GATEWELL)	LF	4	
60	98	10	CLEAN EXIST STRUCTURE	EA	1	
DIVISION 90 - MISCELLANEOUS						
90	79	01	VEHICULAR GATE	EA	1	

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ENGINEERING MANAGEMENT TECHNOLOGY
TEXAS PROFESSIONAL ENGINEERING FIRM REGISTRATION NO. 1582

ESTIMATE OF QUANTITIES

STATE	COUNTY	DRAWN BY: H.S.	CHECKED BY: S.L.T.	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				4

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SUMMARY OF GRADING

LOCATION STA.	31 11 10 PREP RIGHT OF WAY STA	31 14 01 REMOVE/ STOCKPILE (EXIST GRAVEL) * CY	31 14 02 REMOVE/ STOCKPILE (EXIST TOPSOIL) (6 IN) CY	31 14 10 REMOVE ASPHALT SY	33 46 01 PIPE UNDERDRAIN (PVC) LF	35 41 01 RAISE LEVEE (BENCH EXCAV) CY	35 41 02 RAISE LEVEE (EMBANKMENT) CY	35 41 03 RAISE LEVEE (TOPSOIL) CY	35 41 04 RAISE LEVEE (CEMENT STAB) CY	35 42 01 RIPRAP (CONCRETE) CY	35 42 02 RIPRAP (ROCK) CY	35 42 03 GEOTEXTILE FABRIC SY	35 42 04 GEOTEXTILE MEMBRANE SY	90 79 01 VEHICULAR GATE EA
HIDALGO PROTECTIVE LEVEE														
195+00 TO 203+28	8.3	220	1172			9424	29,178	1310			1550	4650		
203+28 TO 213+28	10	171	2004			12,155	34,146	1556			2696	8088		
213+28 TO 223+30	10	51	513		1000	3202	10,249	394	15,990	780	1116	2526	2340	
223+30 TO 233+17	9.9	227	2301			15,123	56,106	1919						
233+17 TO 239+75.68	6.6	119	905			6584	21,912	733			570	1711		1
ACCESS ROADS														
197+34		276						297						
220+88		193						365						
BANKER FLOODWAY SOUTH LEVEE														
238+68.33 TO 245+07.56	4.3	143	508			1402	3592	548						
SPUR 115 FRONTAGE ROAD														
4+57.50 TO 8+42.50	3.9			1027										
TOTALS	53.0	1400	7403	1027	1000	47,890	155,183	7122	15,990	780	5932	16,975	2340	1

* BASED ON 70% RECOVERY; EXISTING GRAVEL REMOVED MAY BE USED ON ACCESS ROADS AS ROADWAY EMBANKMENT.

SUMMARY OF ROADWAY

LOCATION STA.	50 11 02 ROADWAY EMBANKMENT (ACCESS ROAD) CY	50 12 ROADWAY EXCAV ** CY	50 20 01 ROADWAY FLEX BASE (TY E GR 4) CY	50 21 01 PRIME OIL (MC-30) GAL	50 25 01 HOT MIX ASPH SURF (2 IN) TON
HIDALGO PROTECTIVE LEVEE					
195+00 TO 203+28			310		
203+28 TO 213+28			310		
213+28 TO 223+30			93		
223+30 TO 233+17			310		
233+17 TO 239+75.68			155		
ACCESS ROADS					
197+34	7648		320		
220+88	4068		272		
BANKER FLOODWAY SOUTH LEVEE					
238+68.33 TO 245+07.56			155		
SPUR 115 FRONTAGE ROAD					
4+57.50 TO 8+42.50	159	257	342	222	177
TOTALS	11,875	257	2267	222	177

** FOR CONTRACTOR INFORMATION ONLY

SUMMARY OF EROSION CONTROL

LOCATION STA.	01 57 01 TEMP EROSION CONTROL (SILT FENCE) LF	01 57 02 TEMP EROSION CONTROL (CONST EXIT) EA	31 92 01 SEEDING (PERM) SY	31 92 03 SEEDING (TEMP) SY	31 92 02 VEGETATIVE WATERING MG
HIDALGO PROTECTIVE LEVEE					
195+00 TO 203+28	1945	0	3930	3930	15.8
203+28 TO 213+28	2000	0	4668	4668	18.6
213+28 TO 223+30	1844	0	1182	1182	4.8
223+30 TO 233+17	1980	0	5757	5757	23.0
233+17 TO 239+75.68	1045	0	2199	2199	8.8
ACCESS ROADS					
197+34	885	80	891	891	3.6
220+88	960	80	2176	2176	8.6
BANKER FLOODWAY SOUTH LEVEE					
238+68.33 TO 245+07.56	963	80	3288	3288	14
SPUR 115 FRONTAGE ROAD					
4+57.50 TO 8+42.50		80			
TOTALS	11,622	320	24,091	24,091	97.2

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ENGINEERING MANAGEMENT TECHNOLOGY
TEXAS PROFESSIONAL ENGINEERING FIRM REGISTRATION NO. 1582

INTERNATIONAL BOUNDARY AND WATER COMMISSION
COMISION INTERNACIONAL DE LIMITES Y AGUAS

SUMMARY OF QUANTITIES

GRADING
ROADWAY
EROSION CONTROL

STATE	COUNTY	DRAWN BY: H.S.	CHECKED BY: D. V. G.	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				5

7/20/2007
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SUMMARY OF STRUCTURES

			60 64 12	60 67 03	60 79 01	60 81 10	60 96 20	60 96 21	60 96 31	60 98 10
STRUCTURE No.	STATION	DESC.	RC PIPE (CL III) (36 IN)	SLOPE END TREAT (36 IN) EA	ABANDON /PLUG STRUCTURE (PIPE) CY	PVC PIPE (SCH 80) (12 IN) LF	REMOVE STR (PIPE) LF	REMOVE STR (PVC) LF	REMOVE STR (LOWER GATEWELL) LF	CLEAN EXIST STRUCTURE EA
253AL	198+05	IRRIG CROSSING			3	260		260	4	
N/A	AR 220+80	DRAINAGE	74	2						
314	COMMON LEVEE	DRAINAGE					55			1
		TOTALS	74	2	3	260	55	260	4	1

AR=ACCESS ROAD

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TEXAS PROFESSIONAL ENGINEERING FIRM REGISTRATION NO. 1582

INTERNATIONAL BOUNDARY AND WATER COMMISSION
COMISION INTERNACIONAL DE LIMITES Y AGUAS

SUMMARY OF QUANTITIES

STRUCTURES

STATE	COUNTY	DRAWN BY: H.S.	CHECKED BY: S.L.T.	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				5A

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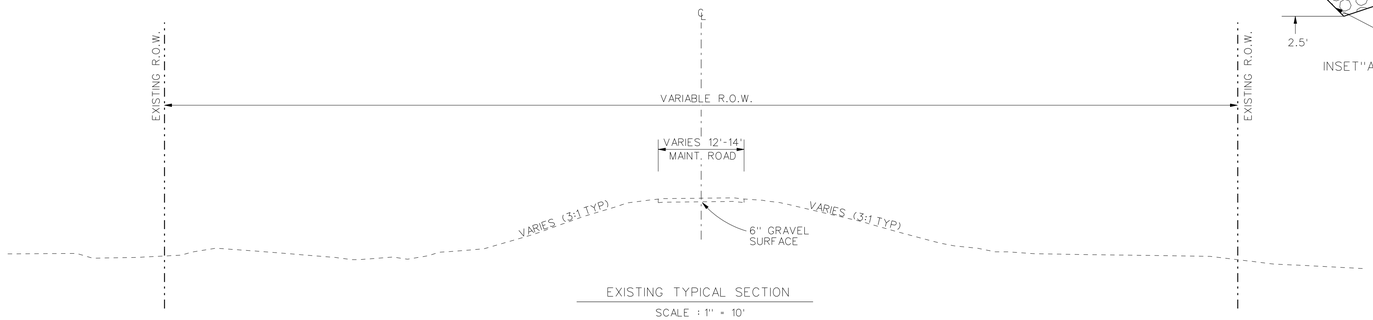
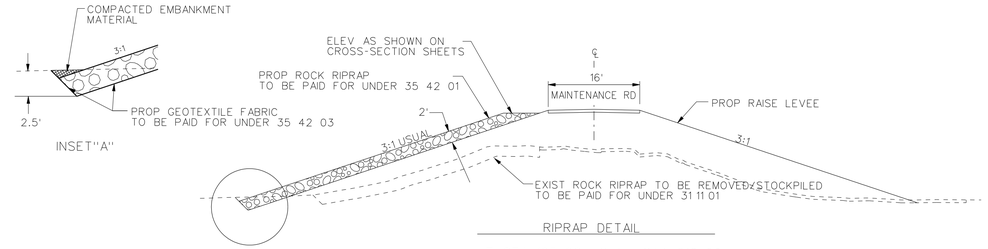


EXISTING TYPICAL SECTION

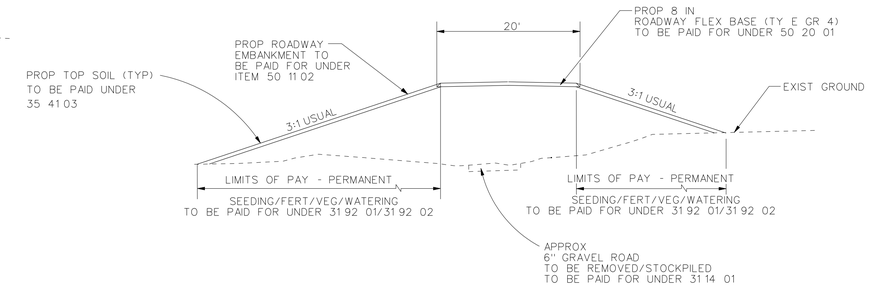
SCALE : 1" = 10'

STA. 63+39.25 TO STA. 239+75.68



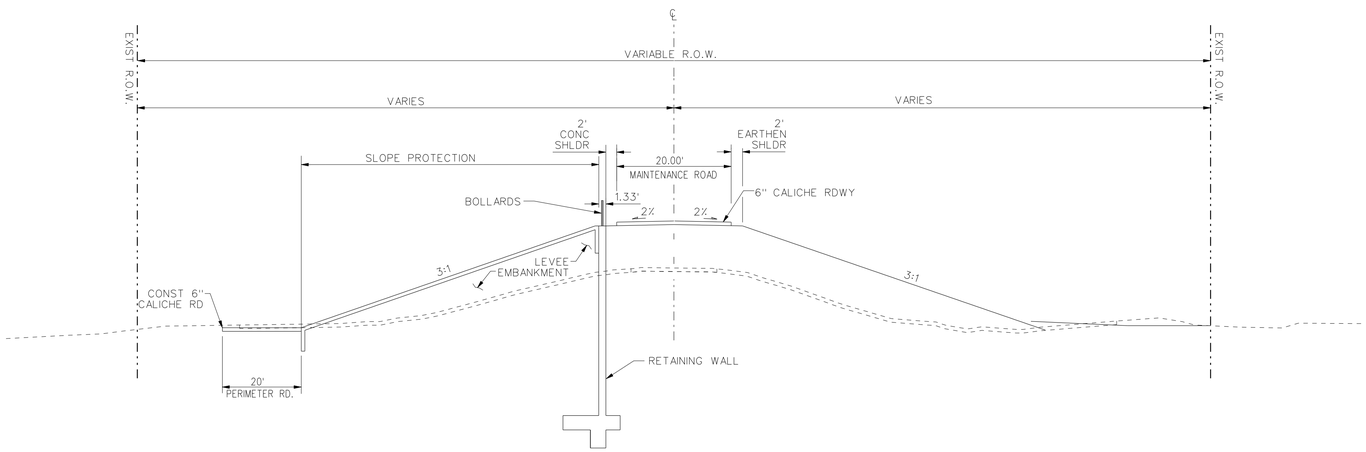
RIPRAP DETAIL

LT STA 195+00 TO LT STA 218+00
LT STA 237+20 TO LT STA 239+25
N.T.S.



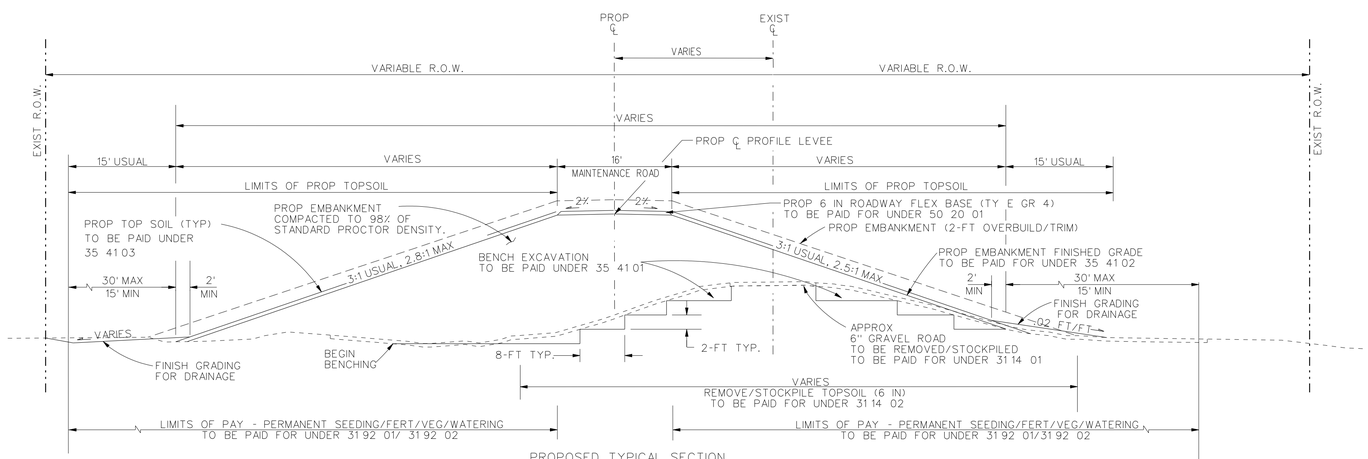
PROPOSED
TYPICAL SECTION FOR ACCESS ROADS

SCALE : 1" = 10'



COMPLETED TYPICAL SECTION BY OTHERS

SCALE : 1" = 10'
STA 195+00.00



PROPOSED TYPICAL SECTION

SCALE : 1" = 10'
STA 195+00.00 TO STA 218+00
STA 223+00.00 TO STA 239+75.68

NOTES:

1. FILL MATERIAL SHALL BE PLACED IN HORIZONTAL LIFTS NOT EXCEEDING 6 IN. COMPACTED THICKNESS AND RECOMPACTED TO A MINIMUM 98 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698. THE MOISTURE CONTENT OF THE FILL SHALL BE MAINTAINED WITHIN THE RANGE OF THE OPTIMUM MOISTURE CONTENT TO THREE PERCENTAGE POINTS ABOVE THE OPTIMUM MOISTURE CONTENT UNTIL THE FINAL LIFT OF FILL IS PERMANENTLY COVERED.

2. NEW CALICHE MATERIAL GRADATION SHALL BE ARGILLACEOUS LIMESTONE, CALCAREOUS OR CALCAREOUS CLAY PARTICLES, WITH OR WITHOUT STONE CONGLOMERATE GRAVEL, SAND, OR GRANULAR MATERIAL:

TYPE E GRADE 4

SIEVE NO.	PERCENT RETAINED
2	0
½	20-60
4	40-75
40	75-85

3. PROPOSED TOP-OF-LEVEE ELEVATIONS WERE PROVIDED BY THE USIBWC.

4. SALVAGED / STOCKPILED GRAVEL MAY BE USED IN THE BOTTOM LIFTS OF ACCESS ROADS IF IT MEETS SUB-BASE SPECIFICATIONS.

5. FINISH GRADING FOR DRAINAGE WILL BE CONSIDERED SUBSIDIARY TO 35 41.

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by MICHAEL C. RIOJAS P.E. on 08/13/09.

S&B INFRASTRUCTURE, LTD.
ENGINEERING MANAGEMENT TECHNOLOGY
TEXAS PROFESSIONAL ENGINEERING FIRM REGISTRATION NO. 1582

INTERNATIONAL BOUNDARY AND WATER COMMISSION
COMISION INTERNACIONAL DE LIMITES Y AGUAS

TYPICAL SECTIONS

HIDALGO PROTECTIVE LEVEE
STA 195+00.00 TO STA 239+75.68

SHEET 1 OF 3

STATE	COUNTY	DRAWN BY: H.S.	CHECKED BY: O.V.G.	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				6

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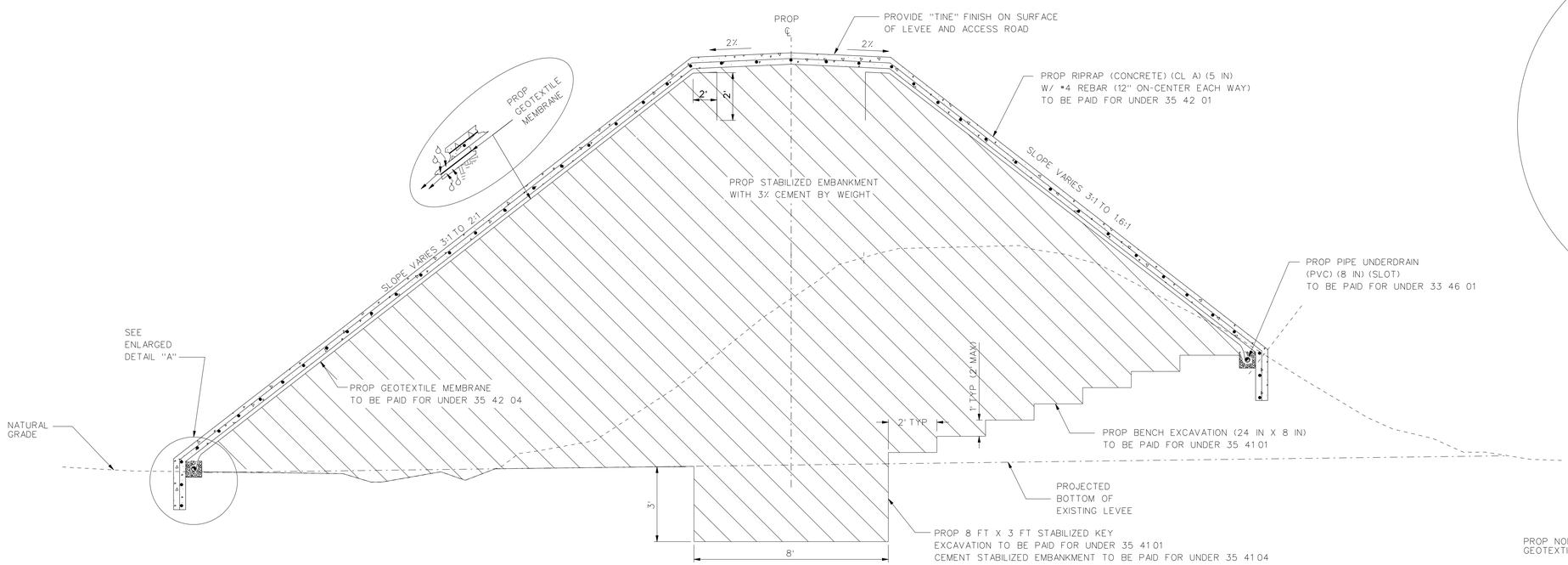
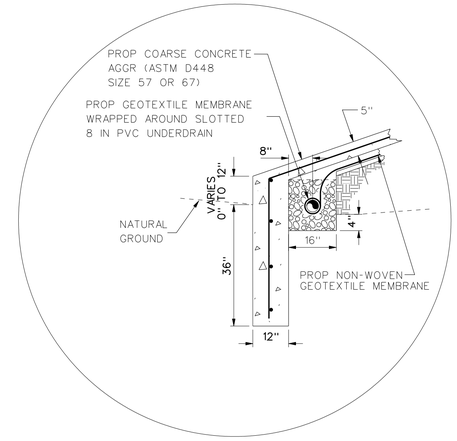
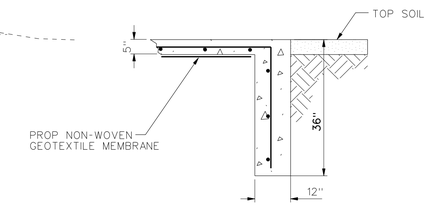


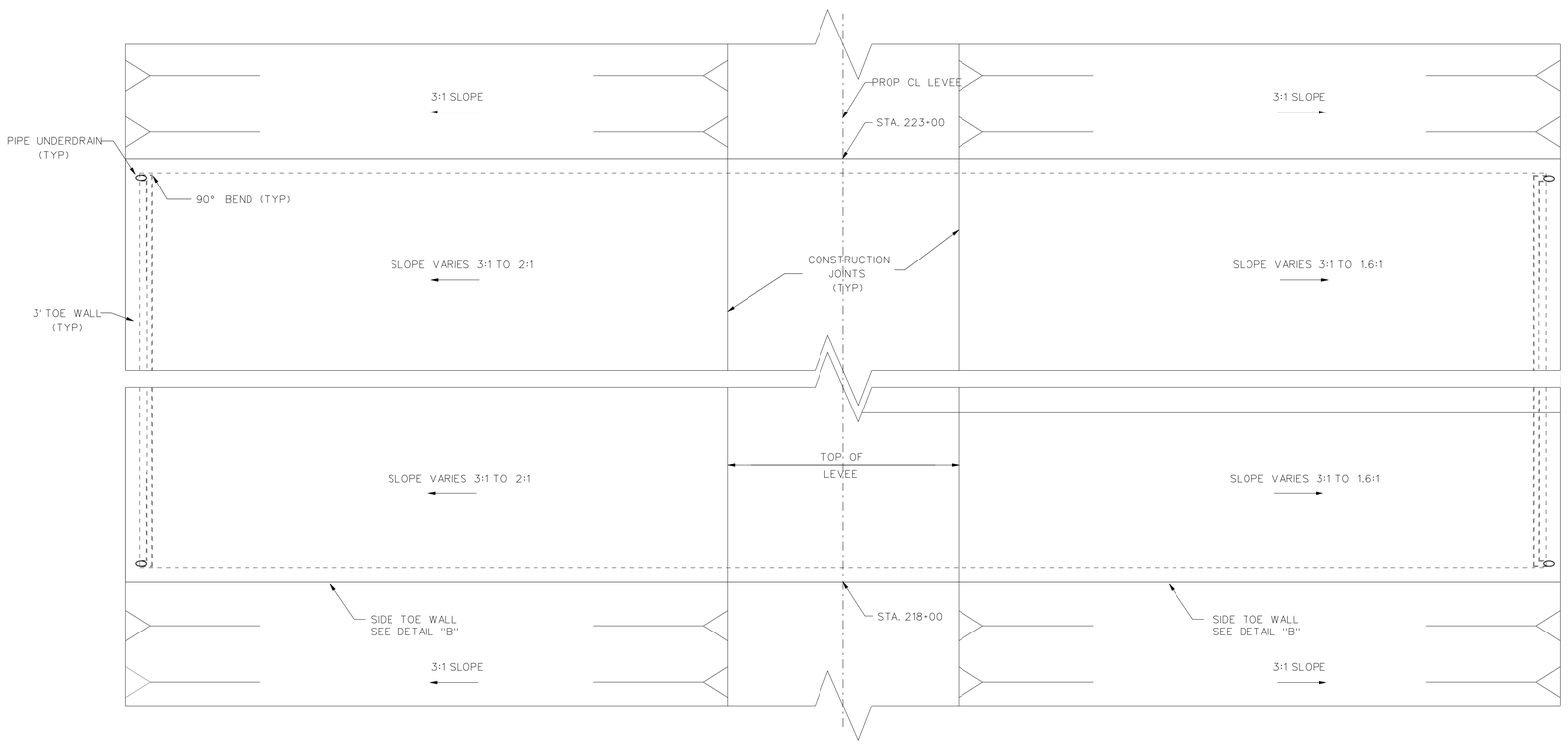
PROPOSED TYPICAL SECTION
SCALE : N.T.S.
STA 218+00 TO 223+00



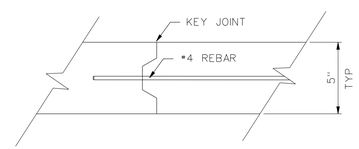
ENLARGED DETAIL A
SCALE : N.T.S.



DETAIL "B"
SCALE : N.T.S.



PLAN VIEW
SCALE : N.T.S.
STA 218+00 TO 223+00



CONSTRUCTION JOINTS
SCALE : N.T.S.

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by MICHAEL C. RIOJAS P.E. 69690, on July 9, 2009

S&R INFRASTRUCTURE, LTD.
ENGINEERING MANAGEMENT TECHNOLOGY
TEXAS PROFESSIONAL ENGINEERING FIRM REGISTRATION NO. 1582

INTERNATIONAL BOUNDARY AND WATER COMMISSION
COMISION INTERNACIONAL DE LIMITES Y AGUAS

TYPICAL SECTIONS

HIDALGO PROTECTIVE LEVEE
STA 218+00 TO STA 223+00

SHEET 2 OF 3

STATE	COUNTY	DRAWN BY: H.S.	CHECKED BY M.C.R.	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				6A

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1/07/2008 (NEW)
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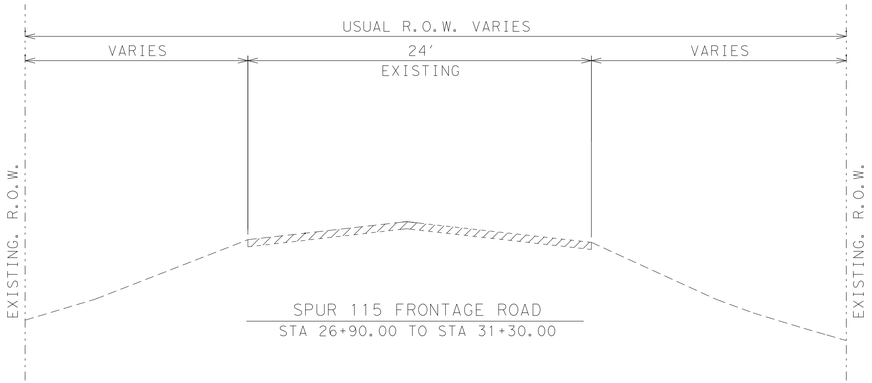
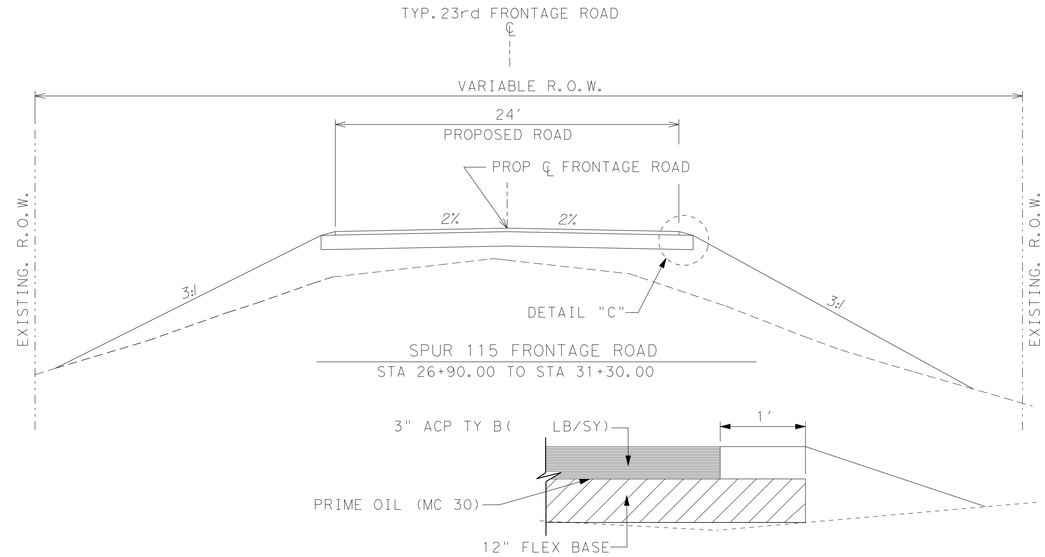
EXISTING TYPICAL SECTION SPUR 115 FRONTAGE ROAD

SCALE : 1" = 5'



PROPOSED TYPICAL SECTION (RAISING SPUR 115 FRONTAGE ROAD)

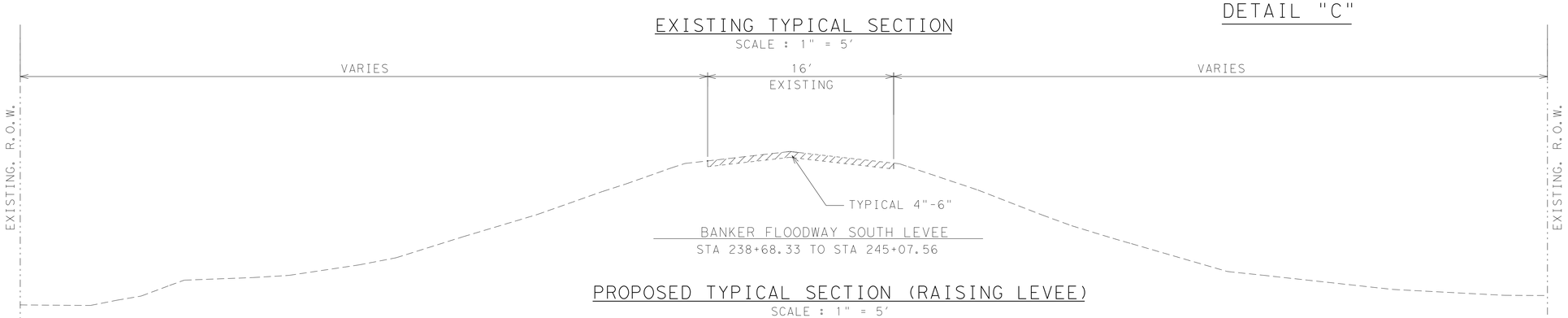
SCALE : 1" = 5'



DETAIL "C"

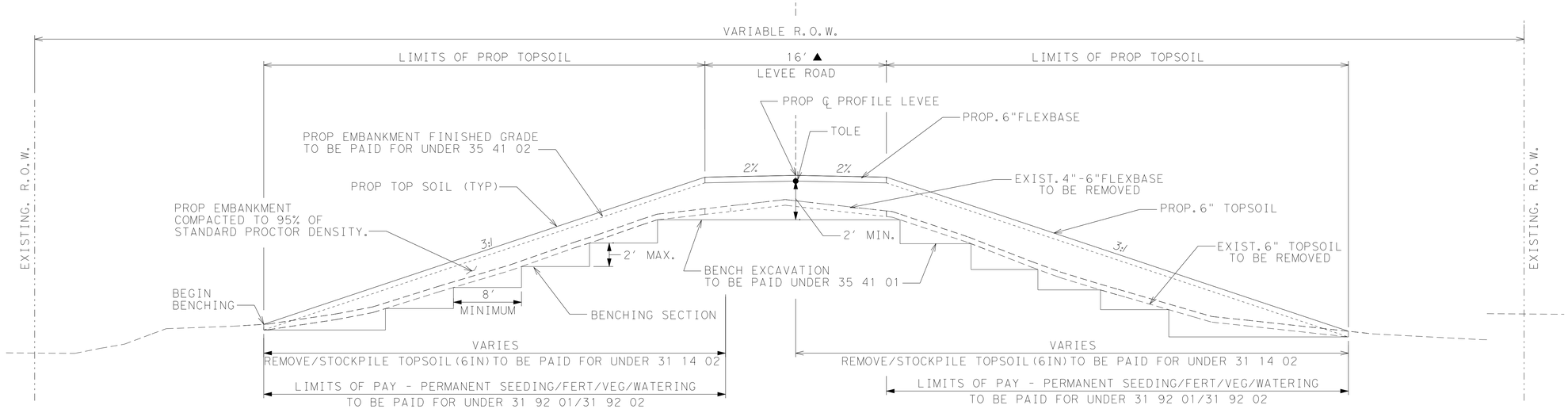
EXISTING TYPICAL SECTION

SCALE : 1" = 5'



PROPOSED TYPICAL SECTION (RAISING LEVEE)

SCALE : 1" = 5'



▲ - END MAINTENANCE ROAD AT FRONTAGE ROAD.

NOTES:

1. FILL MATERIAL SHALL BE PLACED IN HORIZONTAL LIFTS NOT EXCEEDING 6 IN. COMPACTED THICKNESS AND COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698. THE MOISTURE CONTENT OF THE FILL SHALL BE MAINTAINED WITHIN PLUS OR MINUS THREE PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT UNTIL THE FINAL LIFT OF FILL IS PERMANENTLY COVERED.

2. NEW CALICHE MATERIAL GRADATION SHALL BE ARGILLACEOUS LIMESTONE, CALCAREOUS OR CALCAREOUS CLAY PARTICLES, WITH OR WITHOUT STONE CONGLOMERATE GRAVEL, SAND, OR GRANULAR MATERIAL:

TYPE E GRADE 4

SIEVE NO.	PERCENT RETAINED
2	0
1/2	20-60
4	40-75
40	75-85

3. PROPOSED TOP-OF-LEVEE ELEVATIONS WERE PROVIDED BY THE USIBWC.

4. SALVAGED / STOCKPILED GRAVEL MAY BE USED IN THE BOTTOM LIFTS OF ACCESS ROADS.

5. FINISH GRADING FOR DRAINAGE WILL BE CONSIDERED SUBSIDIARY TO 35 41.

TOLE = MINIMUM TOP OF LEVEE ELEVATION

S&B INFRASTRUCTURE, LTD.
Engineering Management Technology
S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by DANIEL GARCES P.E. 100029, on 8-12, 2009.

TYPICAL SECTIONS
BANKER FLOODWAY - SOUTH LEVEE

SHEET 3 OF 3

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO. IBM09T0018		SHEET NO.
REHABILITATION OF BANKER FLOODWAY SOUTH LEVEE				6B

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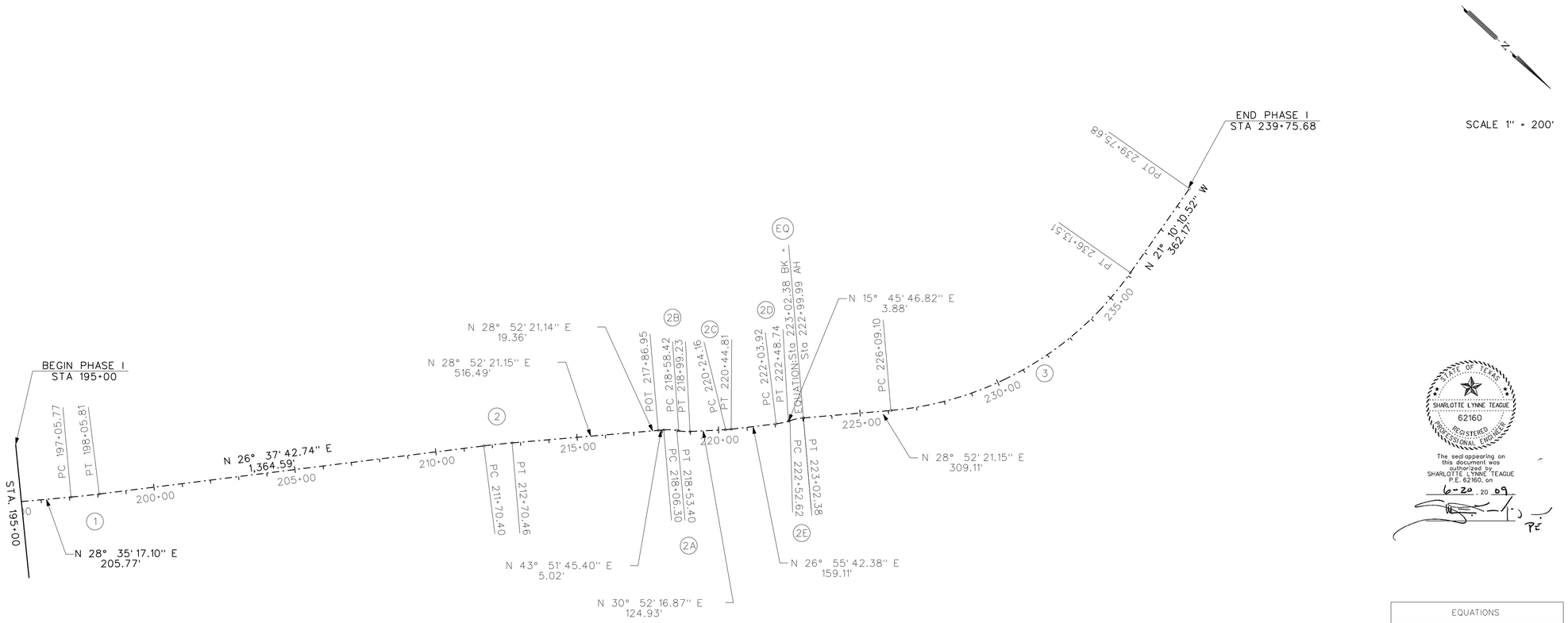

EQUATIONS		
EQ	STATION	158+93.41 BK=
	STATION	158+88.83 AH

BENCHMARK DATA					
	BENCHMARK OR HORIZONTAL CONTROL POINT	DESCRIPTION	STATION (OFFSET)	COORDINATES	ELEVATION
1	AE1240	SET DISK IN CONC. STRUCTURE	STA 68+46.14 (18.44 LT)	N 16,561,680.51 E 1,058,863.17	109.63

ALIGNMENT CURVES

CURVE NO.	STATION	COORDINATES N	COORDINATES E	CURVE DATA
1	PI= 197+55.81 PC= 197+05.78 PT= 198+05.82	16,572,930.27 16,572,886.35 16,572,974.99	1,062,561.15 1,062,537.22 1,062,583.57	DELTA = 1° 57' 34.79" (LT) DEGREE OF CURVE = 1° 57' 31.79" TANGENT = 50.02 LENGTH = 100.04 RADIUS = 2,925.00
2	PI= 212+20.44 PC= 211+70.40 PT= 212+70.46	16,574,239.57 16,574,194.84 16,574,283.39	1,063,217.62 1,063,195.19 1,063,241.78	DELTA = 2° 14' 38.40" (RT) DEGREE OF CURVE = 2° 14' 32.99" TANGENT = 50.04 LENGTH = 100.07 RADIUS = 2,555.00
2A	PI= 218+29.99 PC= 218+06.30 PT= 218+53.40	16,574,773.36 16,574,752.62 16,574,790.44	1,063,511.95 1,063,500.52 1,063,528.36	DELTA = 14° 59' 24" (RT) DEGREE OF CURVE = 31° 49' 52" TANGENT = 23.68 LENGTH = 47.09 RADIUS = 180.0
2B	PI= 218+78.92 PC= 218+58.42 PT= 218+99.23	16,574,808.84 16,574,794.06 16,574,826.43	1,063,546.04 1,063,531.84 1,063,556.56	DELTA = 12° 59' 29" (LT) DEGREE OF CURVE = 31° 49' 52" TANGENT = 20.495 LENGTH = 40.813 RADIUS = 180.0
2C	PI= 220+34.49 PC= 220+24.16 PT= 220+44.81	16,574,942.52 16,574,933.66 16,574,951.727	1,063,625.96 1,063,620.66 1,063,630.64	DELTA = 3° 56' 34" (LT) DEGREE OF CURVE = 19° 05' 55" TANGENT = 10.327 LENGTH = 20.645 RADIUS = 300.000

ALIGNMENT CURVES

CURVE NO.	STATION	COORDINATES N	COORDINATES E	CURVE DATA
2D	PI= 222+26.40 PC= 222+03.92 PT= 222+48.74	16,575,113.63 16,575,093.58 16,575,135.26	1,063,712.88 1,063,718.98 1,063,718.98	DELTA = 11° 09' 56" (LT) DEGREE OF CURVE = 24° 54' 40" TANGENT = 22.482 LENGTH = 44.821 RADIUS = 230.00
2E	PI= 222+77.61 PC= 222+52.62 PT= 223.02.38	16,575,163.05 16,575,139.00 16,575,184.93	1,063,726.83 1,063,720.04 1,063,738.89	DELTA = 13° 06' 34" (RT) DEGREE OF CURVE = 26° 20' 34" TANGENT = 24.991 LENGTH = 49.76 RADIUS = 217.50
3	PI= 231+45.87 PC= 226+09.10 PT= 236+13.51	16,575,925.66 16,575,455.62 16,576,426.21	1,064,147.34 1,063,888.15 1,063,953.49	DELTA = 50° 02' 31.67" (LT) DEGREE OF CURVE = 4° 58' 56.07" TANGENT = 536.77 LENGTH = 1,004.41 RADIUS = 1,150.00

STATE OF TEXAS
SHARLOTTE LYNNE TEAGUE
62160
REGISTERED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by SHARLOTTE LYNNE TEAGUE P.E. 62160, on 6-20, 20 09

NOTES:

HORIZONTAL DATUM: NAD83

VERTICAL DATUM: NAVD88

UNITS: FEET

ALL BEARINGS AND COORDINATES ARE BASED UPON THE TEXAS STATE PLANE COORDINATE SYSTEM, TEXAS SOUTH ZONE. ALL COORDINATES ARE SURFACE COORDINATES.

S&R INFRASTRUCTURE, LTD.
ENGINEERING MANAGEMENT TECHNOLOGY
TEXAS PROFESSIONAL ENGINEERING FIRM REGISTRATION NO. 1582

INTERNATIONAL BOUNDARY AND WATER COMMISSION
COMISION INTERNACIONAL DE LIMITES Y AGUAS

ALIGNMENT DATA

HIDALGO PROTECTIVE LEVEE
STA 195+00.00 TO STA 239+75.68

SHEET 1 OF 2

STATE	COUNTY	DRAWN BY: H.S.	CHECKED BY: M.C.R.	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				7

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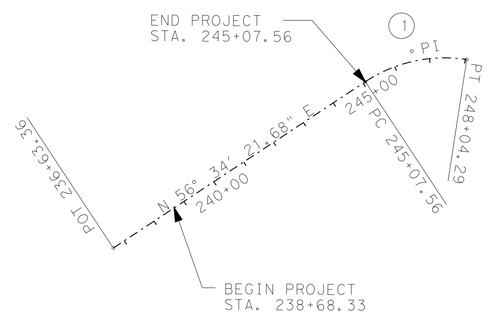

SCALE 1" = 200'

CURVE NO.	STATION	COORDINATES N	COORDINATES E	CURVE DATA		
1	P.I = 246+63.01	16,576,605.35	1,064,534.50	DELTA	=	42° 10' 55.00" (RT)
	P.C = 245+07.56	16,576,519.71	1,064,404.76	DEGREE OF CURVE	=	14° 12' 56.00"
	P.T = 248+04.29	16,576,581.69	1,064,688.14	TANGENT	=	155.45
				LENGTH	=	296.73
				RADIUS	=	403.05

NOTES:

HORIZONTAL DATUM: NAD83

VERTICAL DATUM: NAVD88

UNITS: FEET

ALL BEARINGS AND COORDINATES ARE BASED UPON THE TEXAS STATE PLANE COORDINATE SYSTEM, TEXAS SOUTH ZONE. ALL COORDINATES ARE SURFACE COORDINATES.

INTERNATIONAL BOUNDARY AND WATER COMMISSION
COMISION INTERNACIONAL DE LIMITES Y AGUAS

S&B INFRASTRUCTURE, LTD.
Engineering Management Technology
S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by DANIEL GARCES P.E. 100029, on 8-12, 20 09.

P.E.

ALIGNMENT DATA

BANKER FLOODWAY - SOUTH LEVEE
STA. 238+68.33 TO STA. 245+07.56

SHEET 2 OF 2

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO. IBM09T0018		SHEET NO.
REHABILITATION OF BANKER FLOODWAY SOUTH LEVEE				7A

8/13/2009

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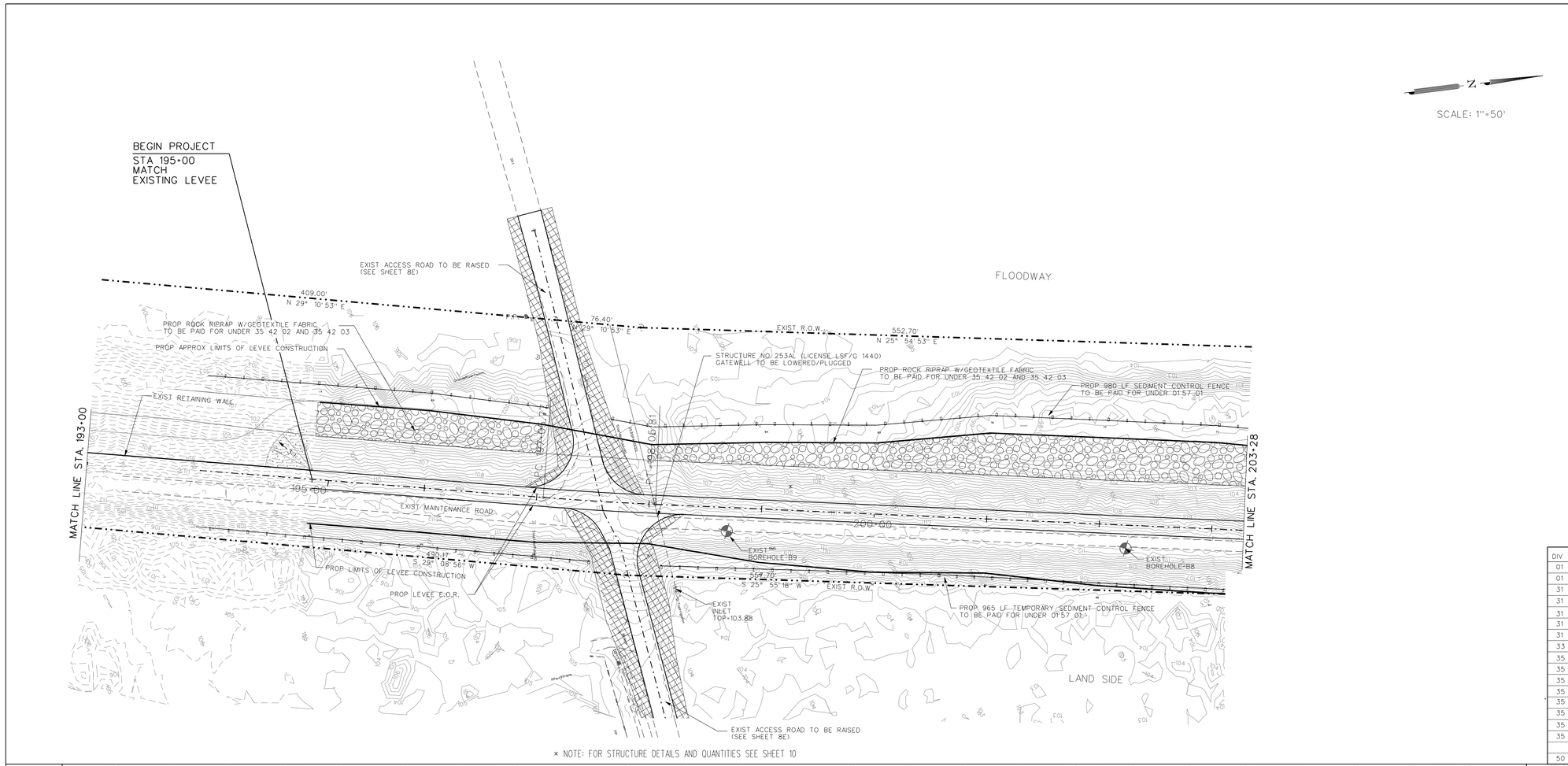


* NOTE: FOR STRUCTURE DETAILS AND QUANTITIES SEE SHEET 10

PLAN VIEW LEGEND

- EXISTING LEVEE CL
- EXISTING RIGHT-OF-WAY
- GEOTECHNICAL BORE
- EXISTING FLOOD WALL
- EXISTING OVERHEAD UTILITY (P.P.)
- EXISTING SIGN
- EXISTING ROADWAY
- CONTOURS (101)
- EXIST DITCH
- EXIST. GAS (GAS)
- EXIST. WATER (W)
- SEDIMENT CONTROL FENCE
- PROPOSED REMOVABLE MULTIPANEL FLOODWALL (TYPE I)
- PROP LEVEE MAINTENANCE ROAD

NOTES:

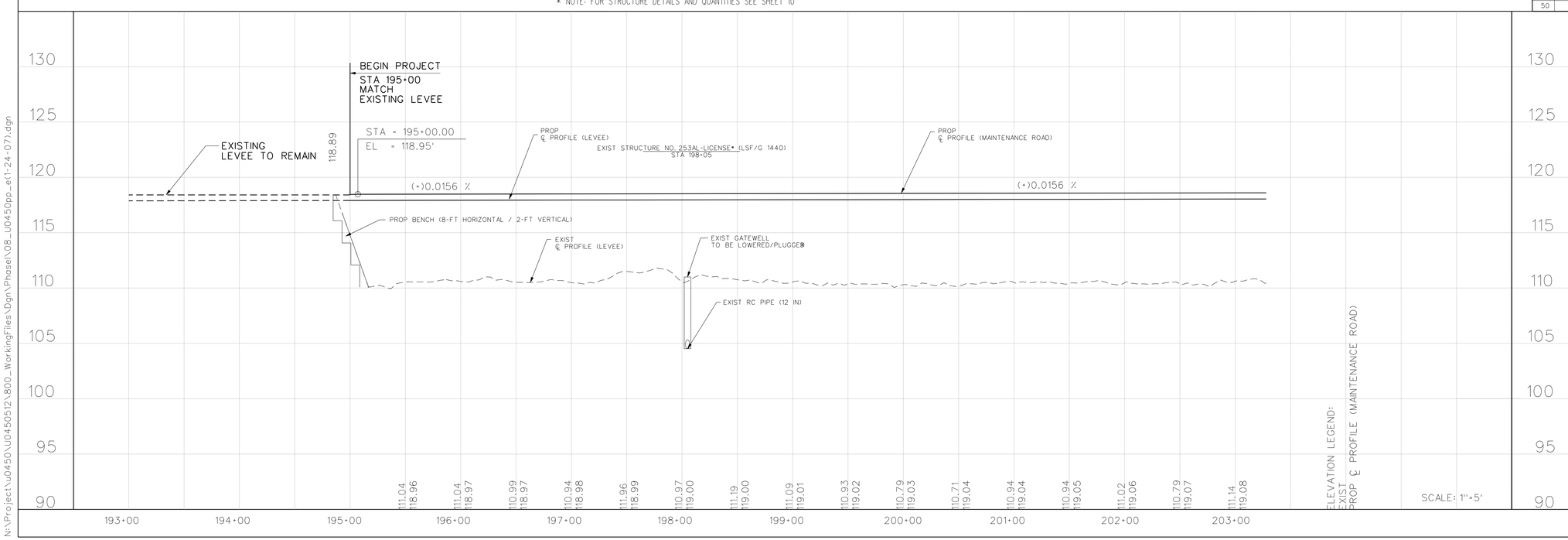
TOPOGRAPHIC DATA WAS DERIVED FROM U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER (ERDC) LIGHT DETECTION AND RANGING (LIDAR) BASED DIGITAL ELEVATION MODEL (DEM) OBTAINED FROM THE UNITED STATES SECTION OF THE INTERNATIONAL BOUNDARY AND WATER COMMISSION (USIBWC), DATED JUNE 2001. TOPOGRAPHIC DATA OUTSIDE THE EXTENTS OF THIS DATA WAS SUPPLEMENTED WITH HIDALGO COUNTY LIDAR BASED, BARE-EARTH DEMS DATED MAY 2004.

PLANIMETRIC INFORMATION WAS OBTAINED FROM FIELD SURVEYS CONDUCTED BY RODS SURVEYING, INC.

EXISTING RIGHT-OF-WAY WAS DERIVED FROM DOCUMENTATION PROVIDED BY THE USIBWC AND IS SHOWN APPROXIMATE, PENDING FINAL FIELD SURVEYS. THE INFORMATION PRESENTED IS NOT BASED ON AN ACTUAL SURVEY ON THE GROUND NOR IS REFERENCED TO ESTABLISHED SURVEYED CONTROL

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)

DIV	ITEM	DESC CODE	DESCRIPTION	UNIT	EST	FINAL
01	57	01	TEMP EROSION CONTROL (SILT FENCE)	LF	1945	
01	57	02	TEMP EROSION CONTROL (CONST EXIT)	EA	0	
31	10	10	PREP RIGHT OF WAY	STA	8.3	
31	14	01	REMOVE/STOCKPILE (EXIST GRAVEL)	CY	220	
31	14	02	REMOVE/STOCKPILE (EXIST LEVEE TOPSOIL (6 IN)	CY	1172	
31	92	01	SEEDING (PERM)	SY	3930	
31	92	02	VEGETATIVE WATERING	MG	7.9	
33	46	01	PIPE UNDERDRAIN (PVC)	LF	0	
35	41	01	RAISE LEVEE (BENCH EXCAV)	CY	9424	
35	41	02	RAISE LEVEE (EMBANKMENT)	CY	29178	
35	41	03	RAISE LEVEE (TOPSOIL)	CY	1310	
35	41	04	RAISE LEVEE (CEMENT STAB)	CY	0	
35	42	01	RIPRAP (CONCRETE)	CY	0	
35	42	02	RIPRAP (ROCK)	CY	1550	
35	42	03	GEOTEXTILE FABRIC	SY	4650	
35	42	04	GEOTEXTILE MEMBRANE	SY	0	
50	20	01	ROADWAY FLEX BASE (TYE GR 4)	CY	310	



S&B INFRASTRUCTURE, LTD.
ENGINEERING MANAGEMENT TECHNOLOGY
TEXAS PROFESSIONAL ENGINEERING FIRM REGISTRATION NO. 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by MICHAEL C. RIOJAS on 7-9-09

PLAN & PROFILE

STA 195+00 TO STA. 203+28

STATE	COUNTY	DRAWN BY: H.S.	CHECKED BY:D.V.G.	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				8

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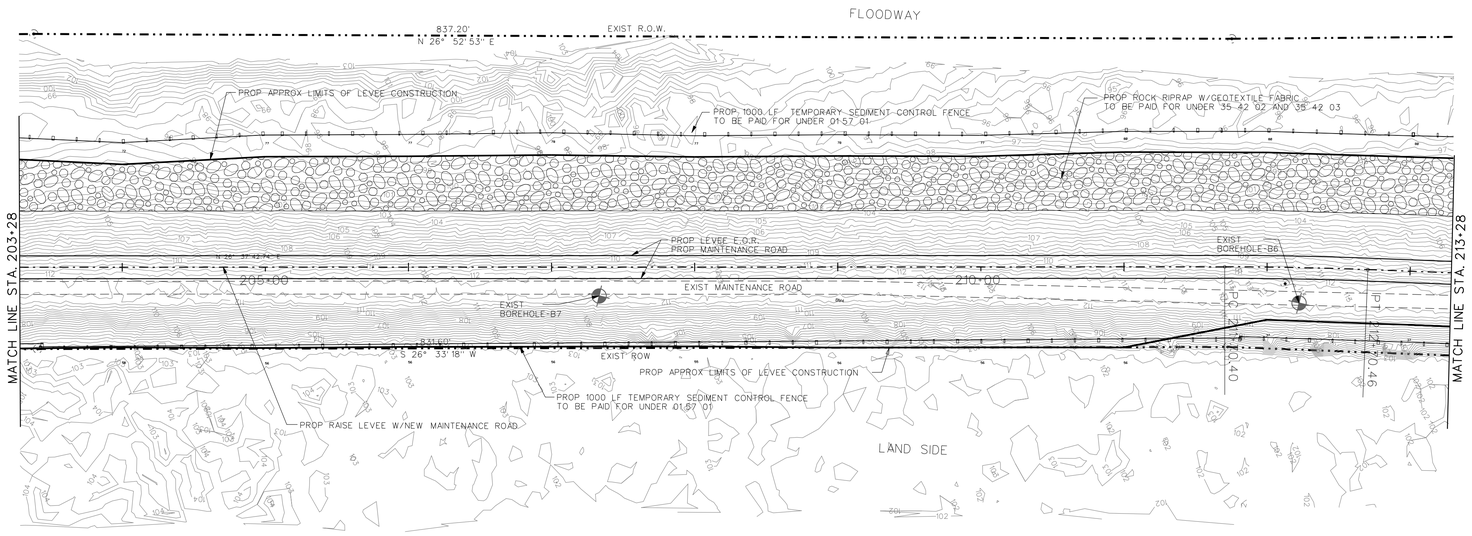

SCALE: 1"=50'

PLAN VIEW LEGEND

- EXISTING LEVEE CL
- EXISTING RIGHT-OF-WAY
- GEOTECHNICAL BORE
- EXISTING FLOOD WALL
- P.P. EXISTING OVERHEAD UTILITY
- EXISTING SIGN
- EXISTING ROADWAY
- 101 CONTOURS
- EXIST DITCH
- GAS EXIST. GAS
- W EXIST. WATER
- SEDIMENT CONTROL FENCE
- PROPOSED REMOVABLE MULTIPANEL FLOODWALL BARRIER
- PROPOSED LEVEE TOE
- PROP LEVEE MAINTENANCE ROAD

NOTES:

TOPOGRAPHIC DATA WAS DERIVED FROM U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER (ERDC) LIGHT DETECTION AND RANGING (LIDAR) BASED DIGITAL ELEVATION MODEL (DEM) OBTAINED FROM THE UNITED STATES SECTION OF THE INTERNATIONAL BOUNDARY AND WATER COMMISSION (USIBWC), DATED JUNE 2001. TOPOGRAPHIC DATA OUTSIDE THE EXTENTS OF THIS DATA WAS SUPPLEMENTED WITH HIDALGO COUNTY LIDAR BASED, BARE-EARTH DEMS DATED MAY 2004.

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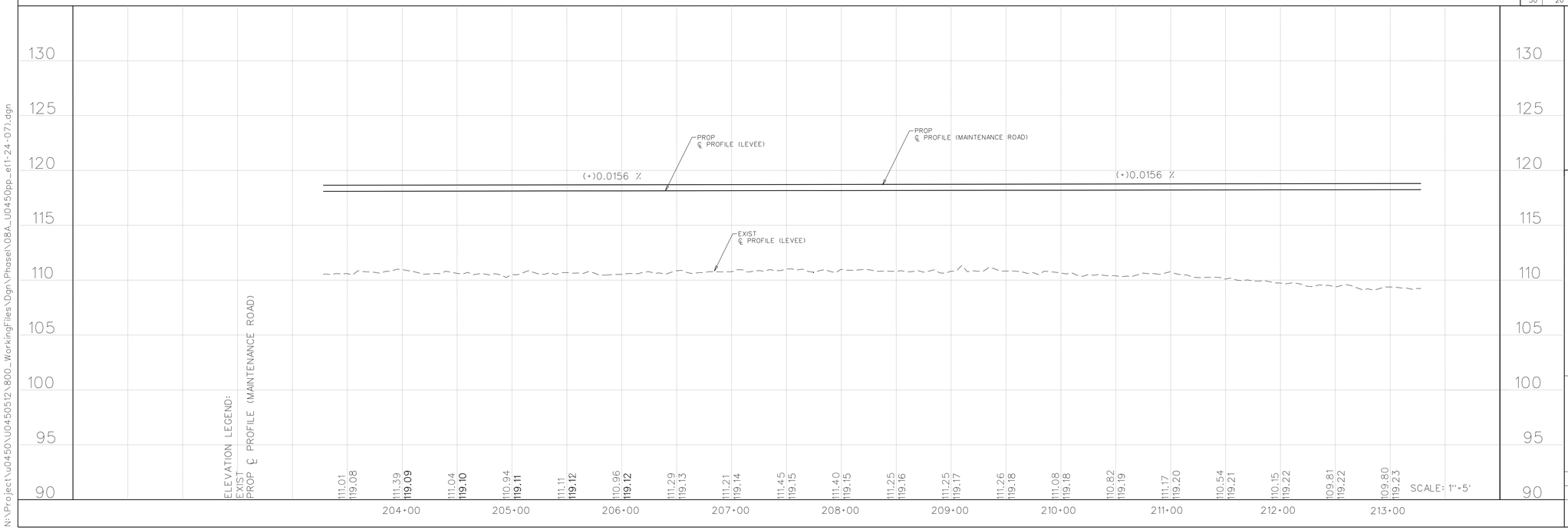
EXISTING RIGHT-OF-WAY WAS DERIVED FROM DOCUMENTATION PROVIDED BY THE USIBWC AND IS SHOWN APPROXIMATE, PENDING FINAL FIELD SURVEYS. THE INFORMATION PRESENTED IS NOT BASED ON AN ACTUAL SURVEY ON THE GROUND NOR IS REFERENCED TO ESTABLISHED SURVEYED CONTROL

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)

DIV	ITEM	DESC CODE	DESCRIPTION	UNIT	EST	FINAL
01	57	01	TEMP EROSION CONTROL (SILT FENCE)	LF	2000	
01	57	02	TEMP EROSION CONTROL (CONST EXIT)	EA	0	
31	10	10	PREP RIGHT OF WAY	STA	10	
31	14	01	REMOVE/STOCKPILE (EXIST GRAVEL)	CY	171	
31	14	02	REMOVE/STOCKPILE (EXIST LEVEE TOPSOIL (6 IN)	CY	2004	
31	92	01	SEEDING (PERM)	SY	4668	
31	92	02	VEGETATIVE WATERING	MG	9.3	
33	46	01	PIPE UNDERDRAIN (PVC)	LF	0	
35	41	01	RAISE LEVEE (BENCH EXCAV)	CY	12155	
35	41	02	RAISE LEVEE (EMBANKMENT)	CY	34146	
35	41	03	RAISE LEVEE (TOPSOIL)	CY	1556	
35	41	04	RAISE LEVEE (CEMENT STAB)	CY	0	
35	42	01	RIPRAP (CONCRETE)	CY	0	
35	42	02	RIPRAP (ROCK)	CY	2696	
35	42	03	GEOTEXTILE FABRIC	SY	8088	
35	42	04	GEOTEXTILE MEMBRANE	SY	0	
50	20	01	ROADWAY FLEX BASE (TYE GR 4)	CY	310	



S&B INFRASTRUCTURE, LTD.
ENGINEERING MANAGEMENT TECHNOLOGY
TEXAS PROFESSIONAL ENGINEERING FIRM REGISTRATION NO. 1582

MICHAEL C. RIOJAS 69690 REGISTERED PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY MICHAEL C. RIOJAS P.E. 69690, ON

PLAN & PROFILE

STA 203+28 TO STA. 213+28

STATE	COUNTY	DRAWN BY: H.S.	CHECKED BY S.L.T.	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				8A

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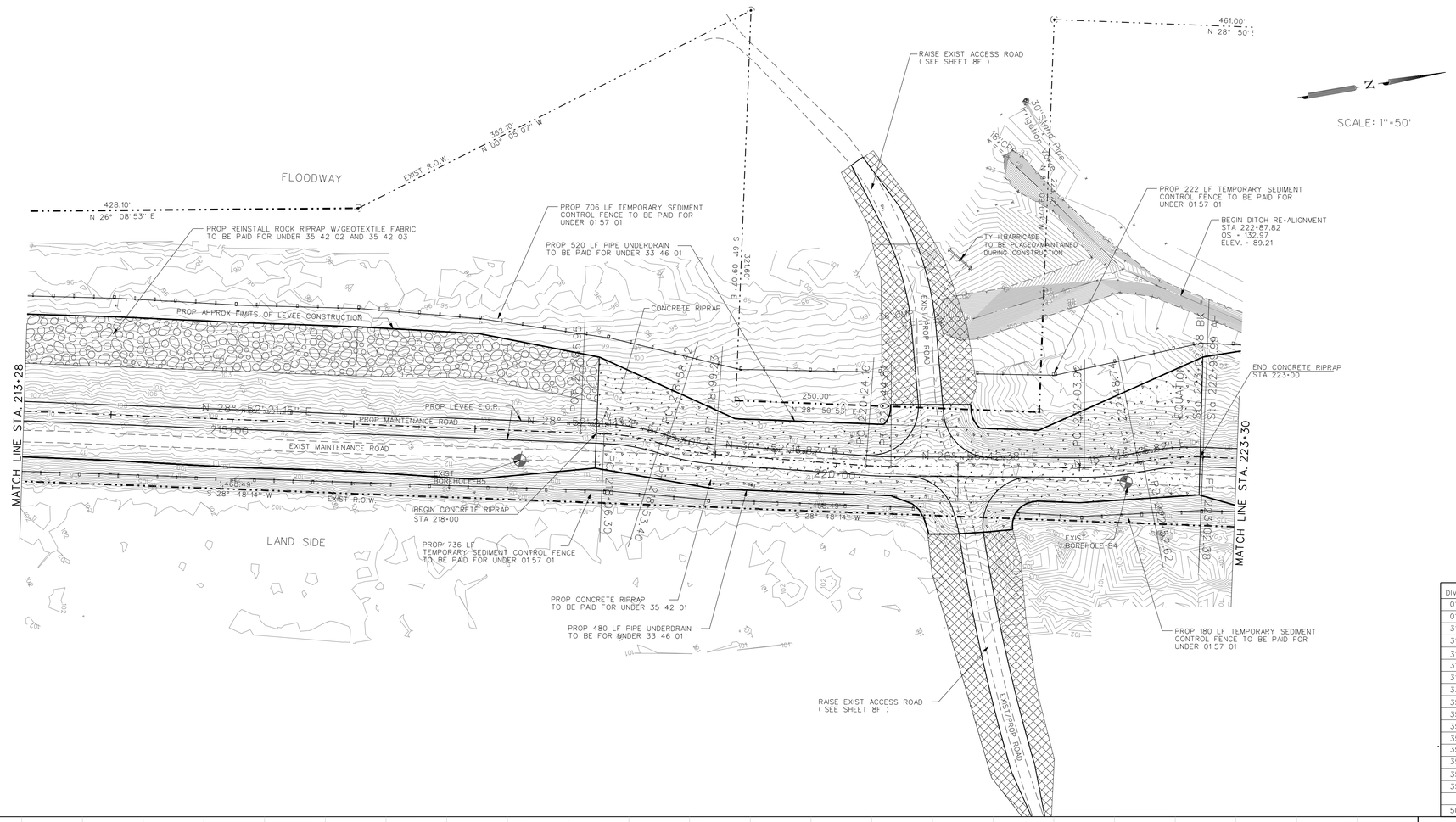


PLAN VIEW LEGEND

- EXISTING LEVEE CL
- EXISTING RIGHT-OF-WAY
- GEOTECHNICAL BORE
- EXISTING FLOOD WALL
- P.P. — EXISTING OVERHEAD UTILITY
- EXISTING SIGN
- EXISTING ROADWAY
- 101 — CONTOURS
- EXIST DITCH
- GAS — EXIST. GAS
- W — EXIST. WATER
- SEDIMENT CONTROL FENCE
- PROPOSED REMOVABLE MULTIPANEL FLOODWALL BARRIER
- PROP LEVEE MAINTENANCE ROAD

NOTES:

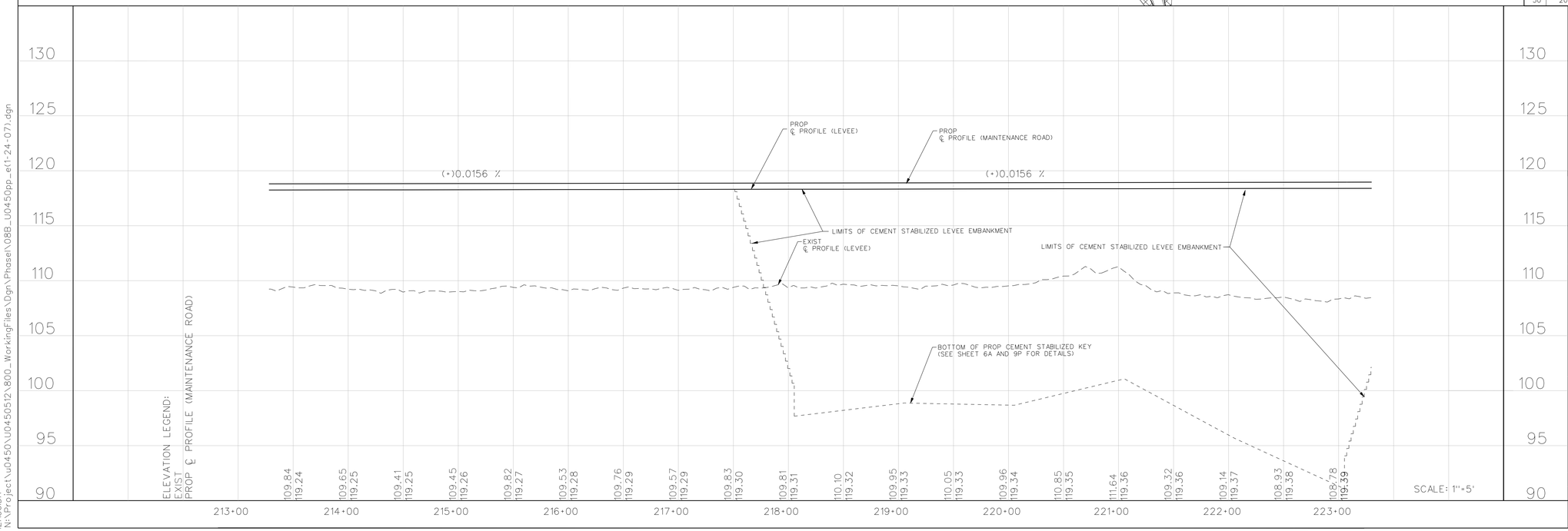
TOPOGRAPHIC DATA WAS DERIVED FROM U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER (ERDC) LIGHT DETECTION AND RANGING (LIDAR) BASED DIGITAL ELEVATION MODEL (DEM) OBTAINED FROM THE UNITED STATES SECTION OF THE INTERNATIONAL BOUNDARY AND WATER COMMISSION (USIBWC), DATED JUNE 2001. TOPOGRAPHIC DATA OUTSIDE THE EXTENTS OF THIS DATA WAS SUPPLEMENTED WITH HIDALGO COUNTY LIDAR BASED, BARE-EARTH DEMS DATED MAY 2004.

PLANIMETRIC INFORMATION WAS OBTAINED FROM FIELD SURVEYS CONDUCTED BY RODS SURVEYING, INC.

EXISTING RIGHT-OF-WAY WAS DERIVED FROM DOCUMENTATION PROVIDED BY THE USIBWC AND IS SHOWN APPROXIMATE, PENDING FINAL FIELD SURVEYS. THE INFORMATION PRESENTED IS NOT BASED ON AN ACTUAL SURVEY ON THE GROUND NOR IS REFERENCED TO ESTABLISHED SURVEYED CONTROL

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)

DIV	ITEM	DESC CODE	DESCRIPTION	UNIT	EST	FINAL
01	57	01	TEMP EROSION CONTROL (SILT FENCE)	LF	1844	
01	57	02	TEMP EROSION CONTROL (CONST EXIT)	EA	0	
31	10	10	PREP RIGHT OF WAY	STA	10	
31	14	01	REMOVE/STOCKPILE (EXIST GRAVEL)	CY	51	
31	14	02	REMOVE/STOCKPILE (EXIST LEVEE TOPSOIL (6 IN)	CY	513	
31	92	01	SEEDING (PERM)	SY	1182	
31	92	02	VEGETATIVE WATERING	MG	2.4	
33	46	01	PIPE UNDERDRAIN (PVC)	LF	1000	
35	41	01	RAISE LEVEE (BENCH EXCAV)	CY	3202	
35	41	02	RAISE LEVEE (EMBANKMENT)	CY	10249	
35	41	03	RAISE LEVEE (TOPSOIL)	CY	394	
35	41	04	RAISE LEVEE (CEMENT STAB)	CY	5990	
35	42	01	RIPRAP (CONCRETE)	CY	780	
35	42	02	RIPRAP (ROCK)	CY	1116	
35	42	03	GEOTEXTILE FABRIC	SY	2526	
35	42	04	GEOTEXTILE MEMBRANE	SY	2340	
50	20	01	ROADWAY FLEX BASE (TYE GR 4)	CY	93	



S&B INFRASTRUCTURE, LTD.
ENGINEERING MANAGEMENT TECHNOLOGY
TEXAS PROFESSIONAL ENGINEERING FIRM REGISTRATION NO. 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED
PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY MICHAEL C. RIOJAS P.E. 69690, ON

PLAN & PROFILE

STA 213+28 TO STA. 223+30

STATE	COUNTY	DRAWN BY: H.S.	CHECKED BY:D.V.G.	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				8B

8/13/2009 9:50:58 PM

7/20/2007
IZAGUIRA
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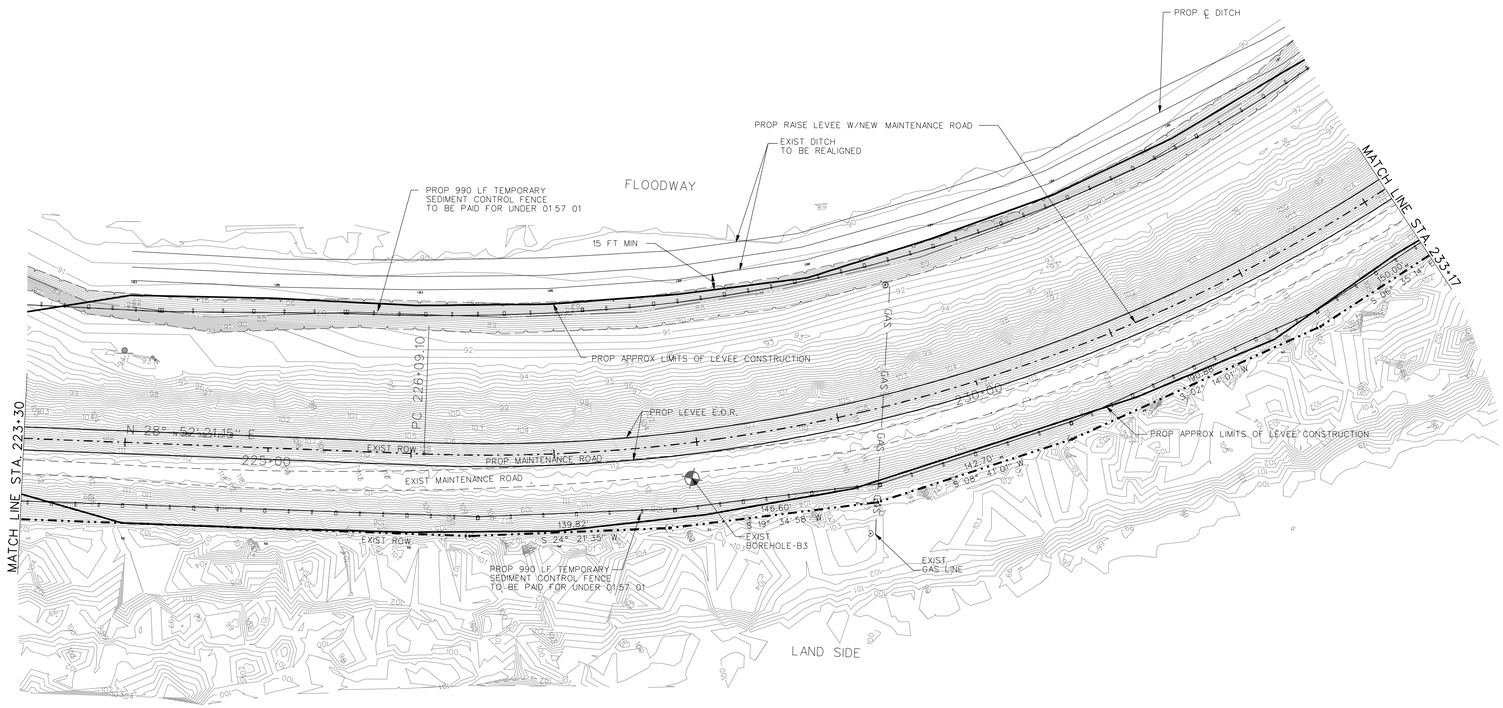

SCALE: 1"=50'

PLAN VIEW LEGEND

- EXISTING LEVEE CL
- EXISTING RIGHT-OF-WAY
- GEOTECHNICAL BORE
- EXISTING FLOOD WALL
- EXISTING OVERHEAD UTILITY (P.P.)
- EXISTING SIGN
- EXISTING ROADWAY
- CONTOURS (101)
- EXIST DITCH
- EXIST. GAS (GAS)
- EXIST. WATER (W)
- SEDIMENT CONTROL FENCE
- PROPOSED REMOVABLE MULTIPANEL FLOODWALL W/BERM TOE
- PROP LEVEE MAINTENANCE ROAD

NOTES:

TOPOGRAPHIC DATA WAS DERIVED FROM U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER (ERDC) LIGHT DETECTION AND RANGING (LIDAR) BASED DIGITAL ELEVATION MODEL (DEM) OBTAINED FROM THE UNITED STATES SECTION OF THE INTERNATIONAL BOUNDARY AND WATER COMMISSION (USIBWC), DATED JUNE 2001. TOPOGRAPHIC DATA OUTSIDE THE EXTENTS OF THIS DATA WAS SUPPLEMENTED WITH HIDALGO COUNTY LIDAR BASED, BARE-EARTH DEMS DATED MAY 2004.

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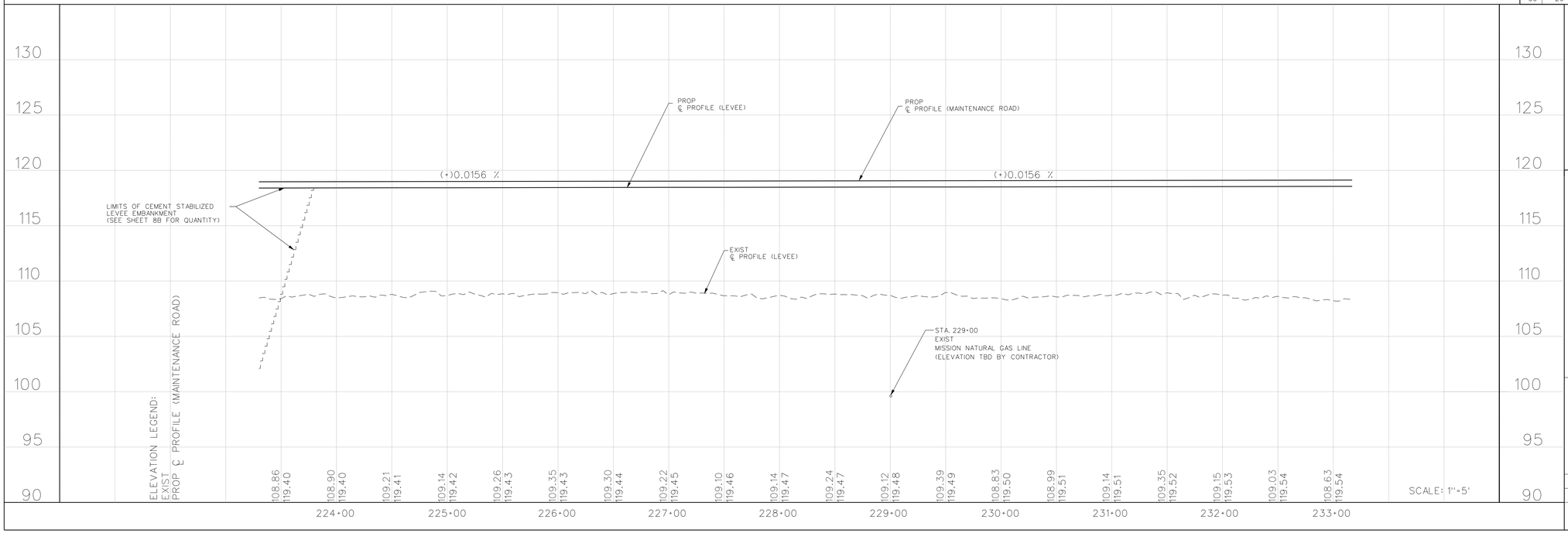
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)

DIV	ITEM	DESC CODE	DESCRIPTION	UNIT	EST	FINAL
01	57	01	TEMP EROSION CONTROL (SILT FENCE)	LF	1980	
01	57	02	TEMP EROSION CONTROL (CONST EXIT)	EA	0	
31	10	10	PREP RIGHT OF WAY	STA	9.9	
31	14	01	REMOVE/STOCKPILE (EXIST GRAVEL)	CY	227	
31	14	02	REMOVE/STOCKPILE (EXIST LEVEE TOPSOIL (6 IN)	CY	2301	
31	92	01	SEEDING (PERM)	SY	5757	
31	92	02	VEGETATIVE WATERING	MG	11.5	
33	46	01	PIPE UNDERDRAIN (PVC)	LF	0	
35	41	01	RAISE LEVEE (BENCH EXCAV)	CY	15123	
35	41	02	RAISE LEVEE (EMBANKMENT)	CY	56106	
35	41	03	RAISE LEVEE (TOPSOIL)	CY	1919	
35	41	04	RAISE LEVEE (CEMENT STAB)	CY	0	
35	42	01	RIPRAP (CONCRETE)	CY	0	
35	42	02	RIPRAP (ROCK)	CY	0	
35	42	03	GEOTEXTILE FABRIC	SY	0	
35	42	04	GEOTEXTILE MEMBRANE	SY	0	
					0	
50	20	01	ROADWAY FLEX BASE (TYE GR 4)	CY	310	



SCALE: 1"=5'

S&B INFRASTRUCTURE, LTD.
ENGINEERING MANAGEMENT TECHNOLOGY
TEXAS PROFESSIONAL ENGINEERING FIRM REGISTRATION NO. 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by MICHAEL C. RIOJAS P.E. 69690, on

PLAN & PROFILE

STA 223+30 TO STA. 233+17

STATE	COUNTY	DRAWN BY: H.S.	CHECKED BY S.L.T.	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.

REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I

8C

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8/13/2009
7/20/2007
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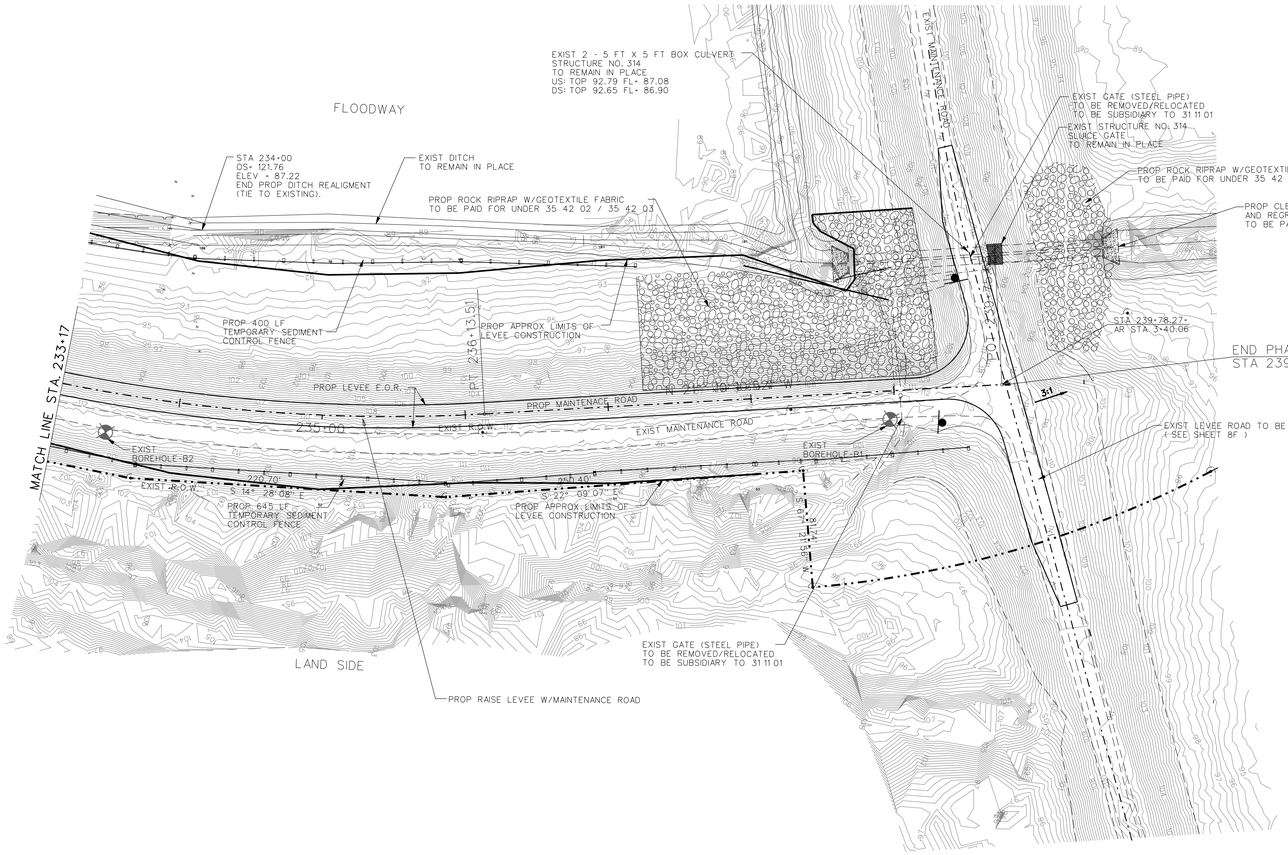

SCALE: 1"=50'

PLAN VIEW LEGEND

- EXISTING LEVEE CL
- EXISTING RIGHT-OF-WAY
- GEOTECHNICAL BORE
- EXISTING FLOOD WALL
- EXISTING OVERHEAD UTILITY (P.P.)
- EXISTING SIGN
- EXISTING ROADWAY
- CONTOURS (101)
- EXIST DITCH
- EXIST. GAS (GAS)
- EXIST. WATER (W)
- SEDIMENT CONTROL FENCE
- PROPOSED REMOVABLE MULTIPANEL FLOODWALL W/BERM
- PROPOSED FLOODWALL W/BERM TOE
- PROP LEVEE MAINTENANCE ROAD

NOTES:

TOPOGRAPHIC DATA WAS DERIVED FROM U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER (ERDC) LIGHT DETECTION AND RANGING (LIDAR) BASED DIGITAL ELEVATION MODEL (DEM) OBTAINED FROM THE UNITED STATES SECTION OF THE INTERNATIONAL BOUNDARY AND WATER COMMISSION (USIBWC), DATED JUNE 2001. TOPOGRAPHIC DATA OUTSIDE THE EXTENTS OF THIS DATA WAS SUPPLEMENTED WITH HIDALGO COUNTY LIDAR BASED, BARE-EARTH DEMS DATED MAY 2004.

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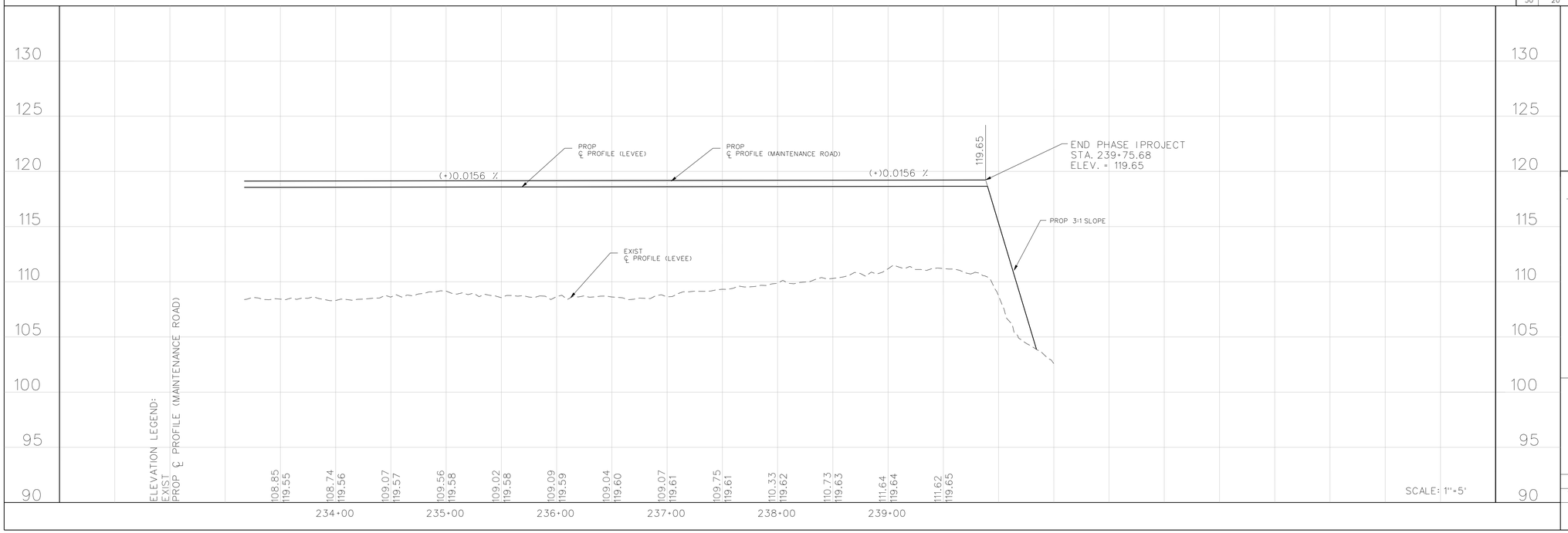
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)

DIV	ITEM	DESC CODE	DESCRIPTION	UNIT	EST	FINAL
01	57	01	TEMP EROSION CONTROL (SILT FENCE)	LF	1045	
01	57	02	TEMP EROSION CONTROL (CONST EXIT)	EA	0	
31	10	10	PREP RIGHT OF WAY	STA	6.6	
31	14	01	REMOVE/STOCKPILE (EXIST GRAVEL)	CY	119	
31	14	02	REMOVE/STOCKPILE (EXIST LEVEE TOPSOIL (6 IN)	CY	905	
31	92	01	SEEDING (PERM)	SY	2199	
31	92	02	VEGETATIVE WATERING	MG	4.4	
33	46	01	PIPE UNDERDRAIN (PVC)	LF	0	
35	41	01	RAISE LEVEE (BENCH EXCAV)	CY	6584	
35	41	02	RAISE LEVEE (EMBANKMENT)	CY	21912	
35	41	03	RAISE LEVEE (TOPSOIL)	CY	733	
35	41	04	RAISE LEVEE (CEMENT STAB)	CY	0	
35	42	01	RIPRAP (CONCRETE)	CY	0	
35	42	02	RIPRAP (ROCK)	CY	570	
35	42	03	GEOTEXTILE FABRIC	SY	1711	
35	42	04	GEOTEXTILE MEMBRANE	SY	0	
50	20	01	ROADWAY FLEX BASE (TYE GR 4)	CY	155	



S&B INFRASTRUCTURE, LTD.
ENGINEERING MANAGEMENT TECHNOLOGY
TEXAS PROFESSIONAL ENGINEERING FIRM REGISTRATION NO. 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by MICHAEL C. RIOJAS P.E. 69690, on Aug 7, 2009

PLAN & PROFILE

STA 233+17 TO 239+75.68

STATE	COUNTY	DRAWN BY: H.S.	CHECKED BY S.L.T.	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				8D

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8/27/2009
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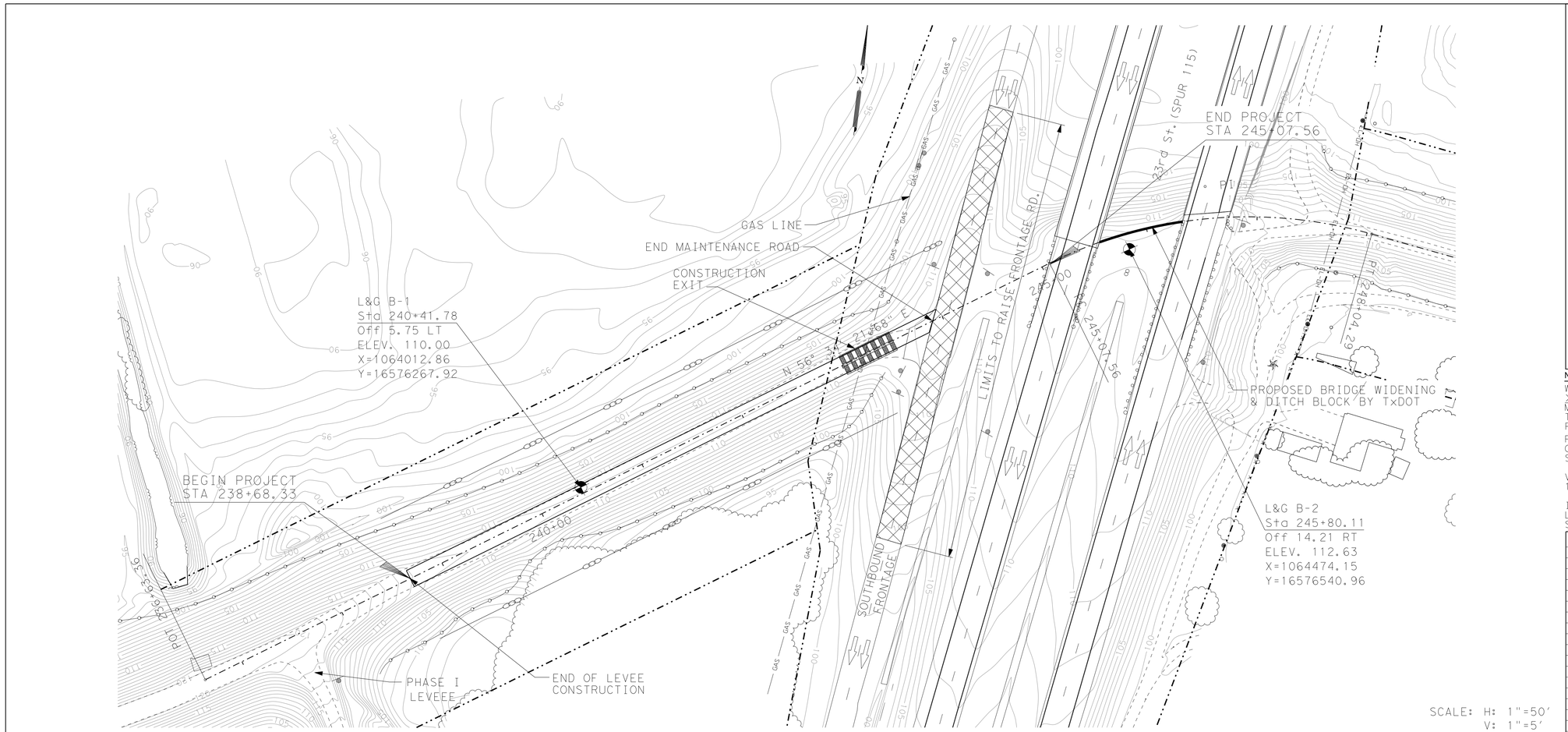
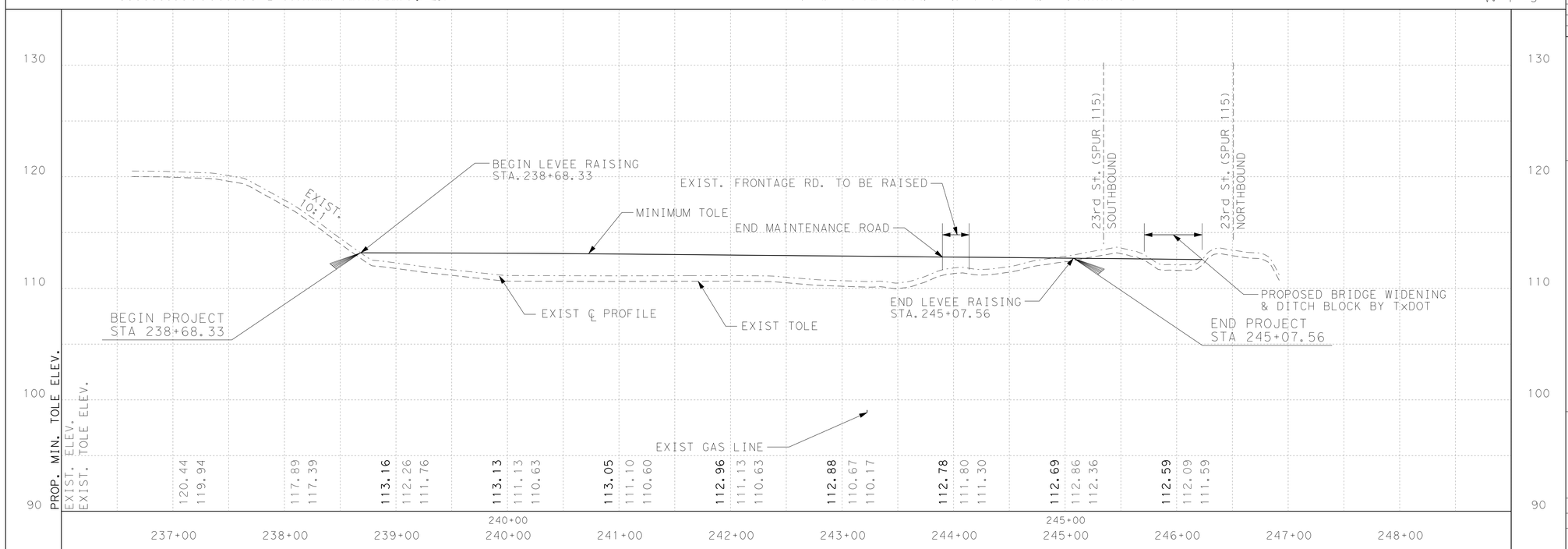
7/20/2007
IZAGUIRA



SCALE: H: 1"=50'
V: 1"=5'



PLAN VIEW LEGEND

- PROP CENTERLINE
- EXIST RIGHT-OF-WAY
- EXIST GEOTECHNICAL BORE
- EXIST FLOODWALL
- EXIST OVERHEAD UTILITY LINE
- EXIST SIGN
- EXIST CONTOURS
- EXIST LEVEE TOE
- EXIST FIBER OPTIC LINE
- EXIST GAS LINE
- EXIST WATER LINE
- EXIST TELEPHONE LINE
- EXIST FENCE
- PROP SEDIMENT CONTROL FENCE
- WATER BOUNDARY
- PROP LEVEE MAINTENANCE ROAD

NOTES:

WHEN EXISTING TOP OF LEVEE ELEVATION (TOLE) IS > THE MINIMUM TOLE, THE LEVEE SHALL NOT BE MODIFIED UNLESS OTHERWISE SHOWN ON PLAN. THE TOLE SHOWN HAS BEEN ADJUSTED BY 1"TO ACCOUNT FOR SETTLEMENT.

PLANIMETRIC AND RIGHT OF WAY INFORMATION WAS OBTAINED FROM FIELD SURVEYS CONDUCTED BY RODS SURVEYING, INC. AND DOS LAND SURVEYING RESPECTIVELY

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)

IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATION OF ALL EXISTING UTILITIES (SHOWN/NOT SHOWN) PRIOR TO CONSTRUCTION.

DIV	ITEM	DESC CODE	DESCRIPTION	UNIT	EST	FINAL
01	57	01	TEMP EROSION CONTROL (SILT FENCE)	LF	963	
01	57	02	TEMP EROSION CONTROL (CONST EXIT)	SY	80	
02	91	10	REMOVE/RELOCATE EXIST FENCE	LF	0	
31	11	10	PREP ROW	STA	4.3	
31	14	01	REMOVE/STKPL (EXISTING GRAVEL)	CY	143	
31	14	02	REMOVE/STKPL (EXIST TOPSOIL 6")	CY	508	
35	41	01	RAISE LEVEE (BENCH EXCAVATION)	CY	1402	
35	41	02	RAISE LEVEE (EMBANKMENT)	CY	3592	
35	41	03	RAISE LEVEE (TOP SOIL)	CY	548	
31	92	01	SEEDING PERM	SY	3288	
31	92	02	VEGETATIVE WATERING	MG	7	
50	11	02	ROADWAY EMBANKMENT(ACCESS ROAD)	CY		
50	20	01	ROADWAY FLEXBASE TY E GR 4	CY	155	
50	21	01	PRIME OIL (MC-30)	GAL	0	
50	25	01	HOT MIX ASPH SURF	TON	0	
90	79	01	VEHICULAR GATE	EA	0	

S&B INFRASTRUCTURE, LTD.
Engineering Management Technology
S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by DANIEL GARCES P.E. 100029, on 8-12, 20 09.

P.E.

PLAN & PROFILE

BANKER FLOODWAY - SOUTH LEVEE
STA. 238+68.33 TO STA. 245+07.56

STATE	COUNTY	DRAWN BY: FV	CHECKED BY: DG	
TEXAS	HIDALGO	PROJECT NO. IBM09T0018		SHEET NO.
REHABILITATION OF BANKER FLOODWAY SOUTH LEVEE				8E

6:40:46 AM 8/27/2009

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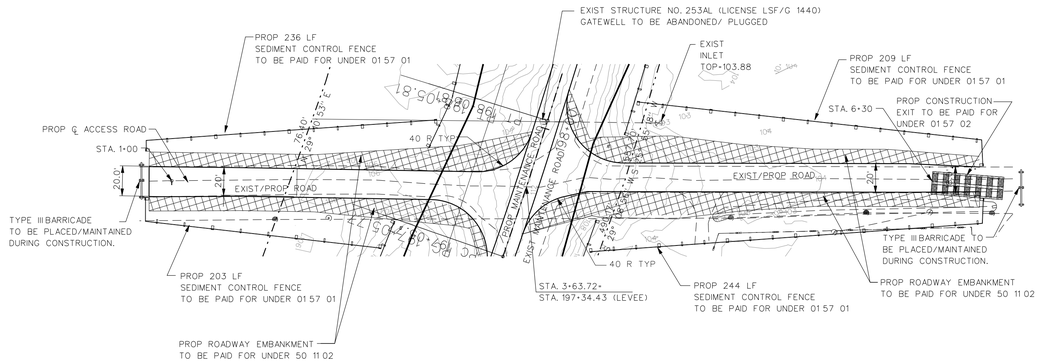
PLAN VIEW LEGEND

- PROP CENTERLINE
- EXIST RIGHT-OF-WAY
- EXIST GEOTECHNICAL BORE
- EXIST FLOODWALL
- EXIST OVERHEAD UTILITY (P.P.)
- EXIST SIGN
- EXIST ROADWAY
- EXIST CONTOURS
- CANAL TOE
- EXIST STORM DRAIN
- GAS — EXIST GAS
- W — EXIST WATER
- PROP SEDIMENT CONTROL FENCE
- PROP APPROX LIMITS OF LEVEE CONSTRUCTION

N

SCALE: 1"=50'



*NOTE: PROPOSED STRUCTURE MODIFICATIONS ARE SHOWN ON SHEET 10.

NOTES:

TOPOGRAPHIC DATA WAS DERIVED FROM U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER (ERDC) LIGHT DETECTION AND RANGING (LIDAR) BASED DIGITAL ELEVATION MODEL (DEM) OBTAINED FROM THE UNITED STATES SECTION OF THE INTERNATIONAL BOUNDARY AND WATER COMMISSION (USIBWC), DATED JUNE 2001. TOPOGRAPHIC DATA OUTSIDE THE EXTENTS OF THIS DATA WAS SUPPLEMENTED WITH HIDALGO COUNTY LIDAR BASED, BARE-EARTH DEMS DATED MAY 2004.

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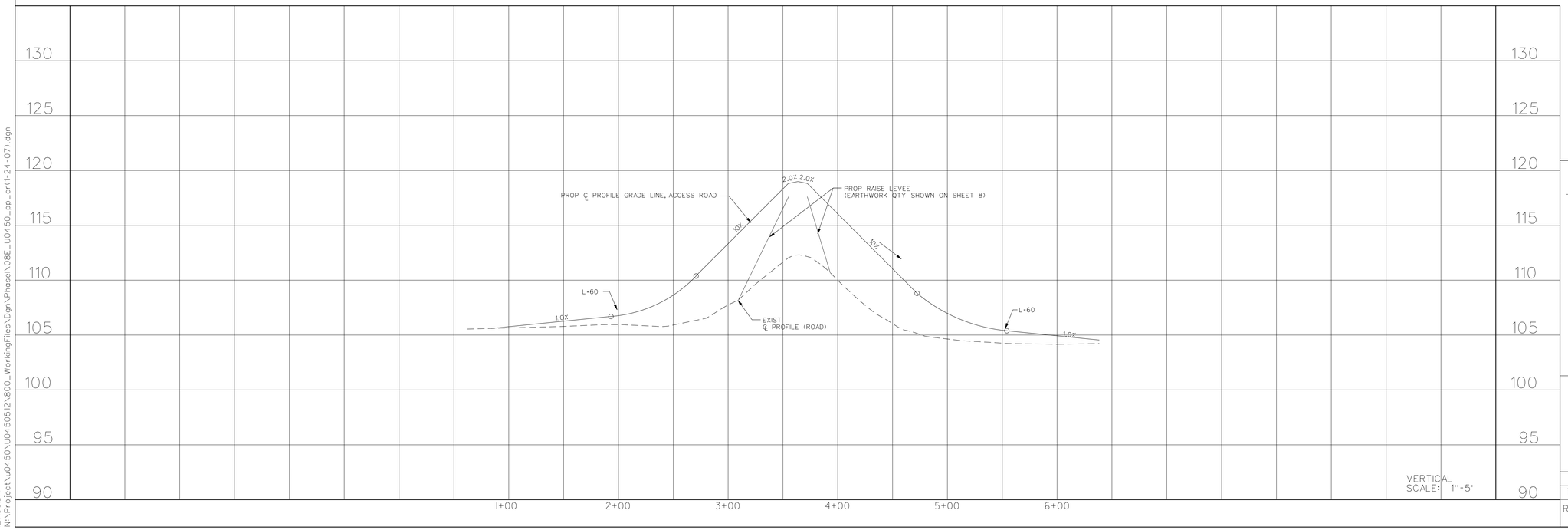
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)

L= LENGTH OF PROPOSED VERTICAL CURVE

ACCESS ROADS ARE NOT DESIGNED FOR PUBLIC USE. ACCESS ROADS ARE DESIGNED FOR SPEEDS NO MORE THAN 5 MPH, AND FOR OFFICIAL USE ONLY.

DIV	ITEM	DESC CODE	DESCRIPTION	UNIT	EST	FINAL
01	57	01	TEMP EROSION CONTROL (SILT FENCE)	LF	885	
01	57	02	TEMP EROSION CONTROL (CONST EXIT)	SY	80	
31	10	10	PREP RIGHT OF WAY	STA	0	
31	14	01	REMOVE/STOCKPILE (EXIST GRAVEL)	CY	276	
31	14	02	REMOVE/STOCKPILE (EXIST LEVEE TOPSOIL (6 IN)	CY	0	
31	92	01	SEEDING (PERM)	SY	891	
31	92	02	VEGETATIVE WATERING	MG	1.8	
33	46	01	PIPE UNDERDRAIN (PVC)	LF	0	
35	41	01	RAISE LEVEE (BENCH EXCAV)	CY	0	
35	41	02	RAISE LEVEE (EMBANKMENT)	CY	0	
35	41	03	RAISE LEVEE (TOPSOIL)	CY	297	
35	41	04	RAISE LEVEE (CEMENT STAB)	CY	0	
35	42	01	RIPRAP (CONCRETE)	CY	0	
35	42	02	RIPRAP (ROCK)	CY	0	
35	42	03	GEOTEXTILE FABRIC	SY	0	
35	42	04	GEOTEXTILE MEMBRANE	SY	0	
50	11	02	ROADWAY ENBANKMENT (ACCESS ROAD)	CY	7648	
50	20	01	ROADWAY FLEX BASE (TYE GR 4)	CY	320	



S&B INFRASTRUCTURE, LTD.
ENGINEERING MANAGEMENT TECHNOLOGY
TEXAS PROFESSIONAL ENGINEERING FIRM REGISTRATION NO. 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by MICHAEL C. RIOJAS P.E. 69690, on

PLAN & PROFILE

ACCESS ROAD
(197+34)

STATE	COUNTY	DRAWN BY: H.S.	CHECKED BY M.C.R.	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				8F

7/20/2007(REV)
IZAGUIDA
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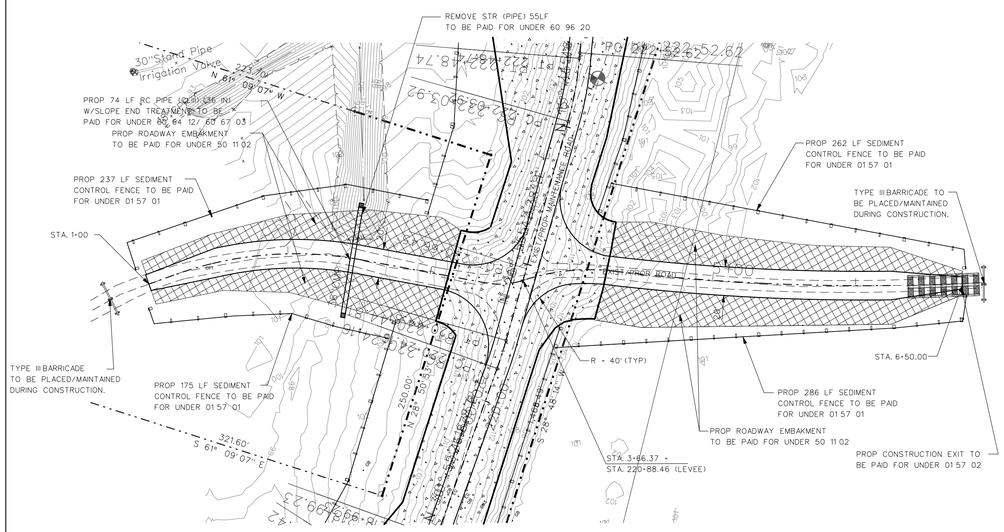
SCALE: 1"=50'



SCALE: 1"=50'

PLAN VIEW LEGEND

- PROP CENTERLINE
- EXIST RIGHT-OF-WAY
- EXIST GEOTECHNICAL BORE
- EXIST FLOODWALL
- P.P. EXIST OVERHEAD UTILITY
- EXIST SIGN
- EXIST ROADWAY
- 101 EXIST CONTOURS
- CANAL TOE
- EXIST STORM DRAIN
- GAS EXIST GAS
- W EXIST WATER
- PROP SEDIMENT CONTROL FENCE
- PROP APPROX LIMITS OF LEVEE CONSTRUCTION

NOTES:

TOPOGRAPHIC DATA WAS DERIVED FROM U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER (ERDC) LIGHT DETECTION AND RANGING (LIDAR) BASED DIGITAL ELEVATION MODEL (DEM) OBTAINED FROM THE UNITED STATES SECTION OF THE INTERNATIONAL BOUNDARY AND WATER COMMISSION (USIBWC), DATED JUNE 2001. TOPOGRAPHIC DATA OUTSIDE THE EXTENTS OF THIS DATA WAS SUPPLEMENTED WITH HIDALGO COUNTY LIDAR BASED, BARE-EARTH DEMS DATED MAY 2004.

PLANEMETRIC AND RIGHT OF WAY INFORMATION WAS OBTAINED FROM FIELD SURVEYS CONDUCTED BY RODS SURVEYING, INC.

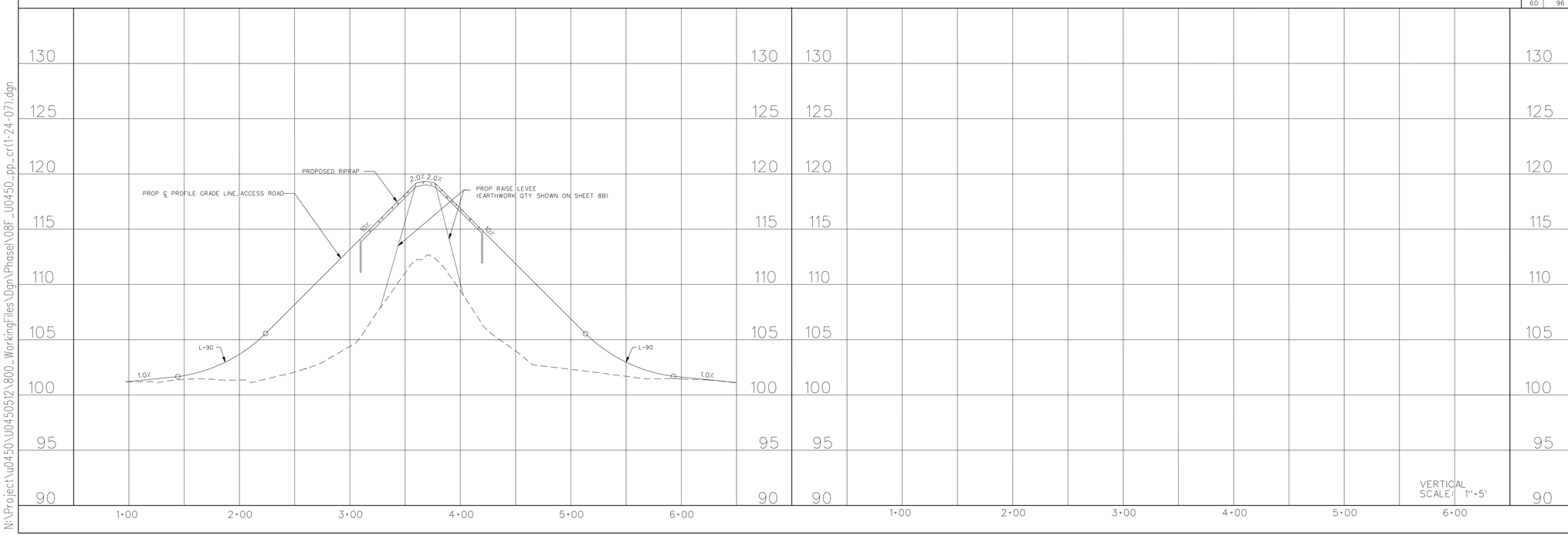
IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATION OF ALL EXISTING UTILITIES (SHOWN/NOT SHOWN) PRIOR TO CONSTRUCTION.

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)

L= LENGTH OF PROPOSED VERTICAL CURVE

ACCESS ROADS ARE NOT DESIGNED FOR PUBLIC USE. ACCESS ROADS ARE DESIGNED FOR SPEEDS NO MORE THAN 5 MPH, AND FOR OFFICIAL USE ONLY.

DIV	ITEM	DESC CODE	DESCRIPTION	UNIT	EST	FINAL
01	57	01	TEMP EROSION CONTROL (SILT FENCE)	LF	960	
01	57	02	TEMP EROSION CONTROL (CONST EXIT)	SY	80	
31	10	10	PREP RIGHT OF WAY	STA	0	
31	14	01	REMOVE/STOCKPILE (EXIST GRAVEL)	CY	193	
31	14	02	REMOVE/STOCKPILE (EXIST LEVEE TOPSOIL (6 IN)	CY	0	
31	92	01	SEEDING (PERM)	SY	2176	
31	92	02	VEGETATIVE WATERING	MG	4.3	
33	46	01	PIPE UNDERDRAIN (PVC)	LF	0	
35	41	01	RAISE LEVEE (BENCH EXCAV)	CY	0	
35	41	02	RAISE LEVEE (EMBANKMENT)	CY	0	
35	41	03	RAISE LEVEE (TOPSOIL)	CY	365	
35	41	04	RAISE LEVEE (CEMENT STAB)	CY	0	
35	42	01	RIPRAP (CONCRETE)	CY	0	
35	42	02	RIPRAP (ROCK)	CY	0	
35	42	03	GEOTEXTILE FABRIC	SY	0	
35	42	04	GEOTEXTILE MEMBRANE	SY	0	
50	11	02	RAISE EMBANKMENT (ACCESS ROAD)	CY	4068	
50	20	01	ROADWAY FLEX BASE (TYE GR 4)	CY	272	
60	96	20	REMOVE STR (PIPE)	LF	55	



S&B INFRASTRUCTURE, LTD.
ENGINEERING MANAGEMENT TECHNOLOGY
TEXAS PROFESSIONAL ENGINEERING FIRM REGISTRATION NO. 1582

STATE OF TEXAS
Sheridate Lynne Teague
62160
REGISTERED PROFESSIONAL ENGINEER
7-31-2009
PE

PLAN & PROFILE

ACCESS ROAD (STA. 220+88)

STATE	COUNTY	DRAWN BY: H.S.	CHECKED BY M.C.R.	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				8G

7/20/2007(REV)
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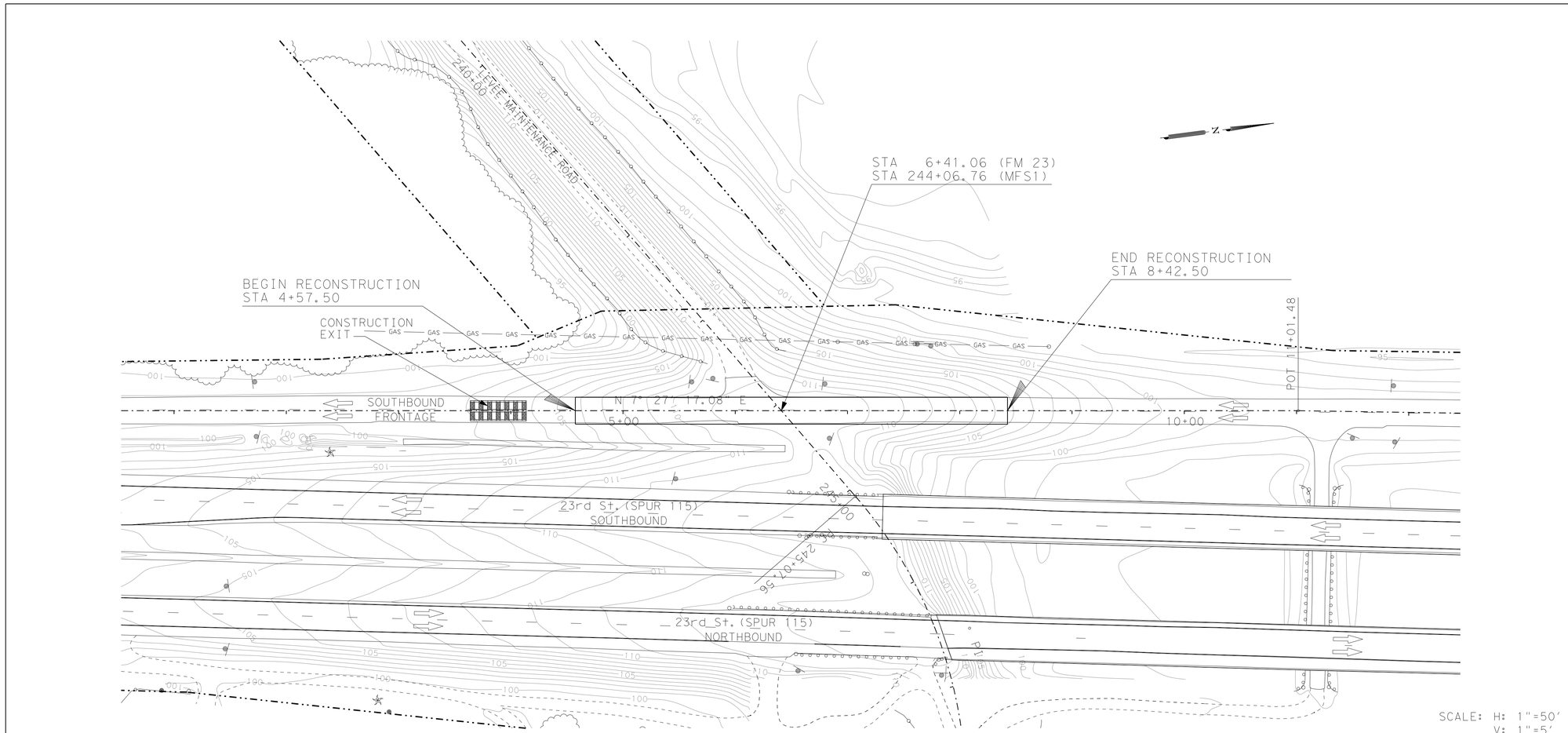

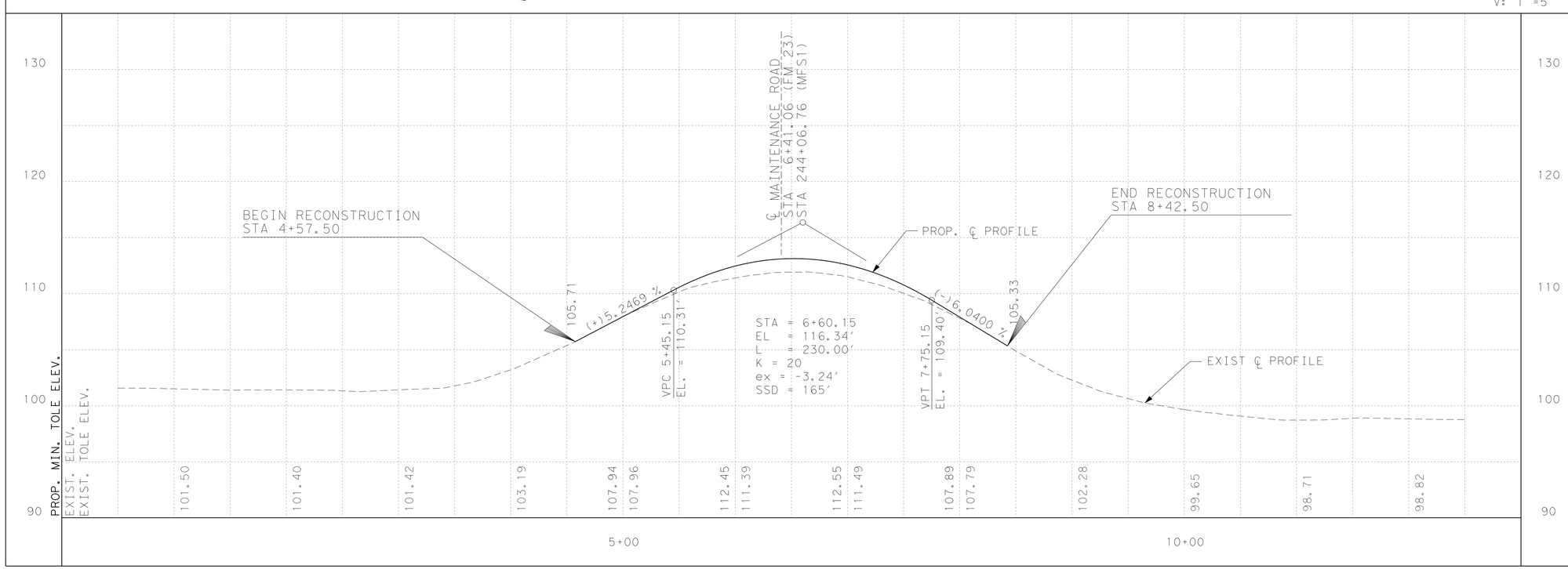

PLAN VIEW LEGEND

- PROP CENTERLINE
- EXIST RIGHT-OF-WAY
- EXIST GEOTECHNICAL BORE
- EXIST FLOODWALL
- EXIST OVERHEAD UTILITY LINE
- EXIST SIGN
- EXIST CONTOURS
- EXIST LEVEE TOE
- EXIST FIBER OPTIC LINE
- EXIST GAS LINE
- EXIST WATER LINE
- EXIST TELEPHONE LINE
- EXIST FENCE
- PROP SEDIMENT CONTROL FENCE
- WATER BOUNDARY
- PROP LEVEE MAINTENANCE ROAD

NOTES:

WHEN EXISTING TOP OF LEVEE ELEVATION (TOLE) IS > THE MINIMUM TOLE, THE LEVEE SHALL NOT BE MODIFIED UNLESS OTHERWISE SHOWN ON PLAN. THE TOLE SHOWN HAS BEEN ADJUSTED BY 1"TO ACCOUNT FOR SETTLEMENT.

PLANIMETRIC AND RIGHT OF WAY INFORMATION WAS OBTAINED FROM FIELD SURVEYS CONDUCTED BY RODS SURVEYING, INC. AND DOS LAND SURVEYING RESPECTIVELY

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)

IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATION OF ALL EXISTING UTILITIES (SHOWN/NOT SHOWN) PRIOR TO CONSTRUCTION.

DIV	ITEM	DESC CODE	DESCRIPTION	UNIT	EST	FINAL
01	57	01	TEMP EROSION CONTROL (SILT FENCE)	LF		
01	57	02	TEMP EROSION CONTROL (CONST EXIT)	SY	80	
31	11	10	PREP ROW	STA	3.9	
31	14	01	REMOVE/STKPL (EXISTING GRAVEL)	CY		
31	14	02	REMOVE/STKPL (EXIST TOPSOIL 6")	CY		
31	14	10	REMOVE ASPHALT	SY	1027	
35	41	01	RAISE LEVEE (BENCH EXCAVATION)	CY		
35	41	02	RAISE LEVEE (EMBANKMENT)	CY		
35	41	03	RAISE LEVEE (TOP SOIL)	CY		
31	92	01	SEEDING PERM	SY		
31	92	02	VEGETATIVE WATERING	MG		
50	11	02	ROADWAY EMBANKMENT(ACCESS ROAD)	CY	159	
50	12		ROADWAY EXCAVATION	CY	257	
50	20	01	ROADWAY FLEXBASE TY E GR 4	CY	342	
50	21	01	PRIME OIL (MC-30)	GAL	222	
50	25	01	HOT MIX ASPH SURF	TON	177	
90	79	01	VEHICULAR GATE	EA		

INTERNATIONAL BOUNDARY AND WATER COMMISSION
COMISION INTERNACIONAL DE LIMITES Y AGUAS

S&B INFRASTRUCTURE, LTD.
Engineering Management Technology

S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by DANIEL GARCES P.E. 100029, on 8-12, 2009

P.E.

PLAN & PROFILE

SPUR 115 FRONTAGE ROAD

STA. 4+57.50 TO STA. 8+42.50

STATE	COUNTY	DRAWN BY: FV	CHECKED BY: DG	
TEXAS	HIDALGO	PROJECT NO. IBM09T0018		SHEET NO.
REHABILITATION OF BANKER FLOODWAY SOUTH LEVEE				8H

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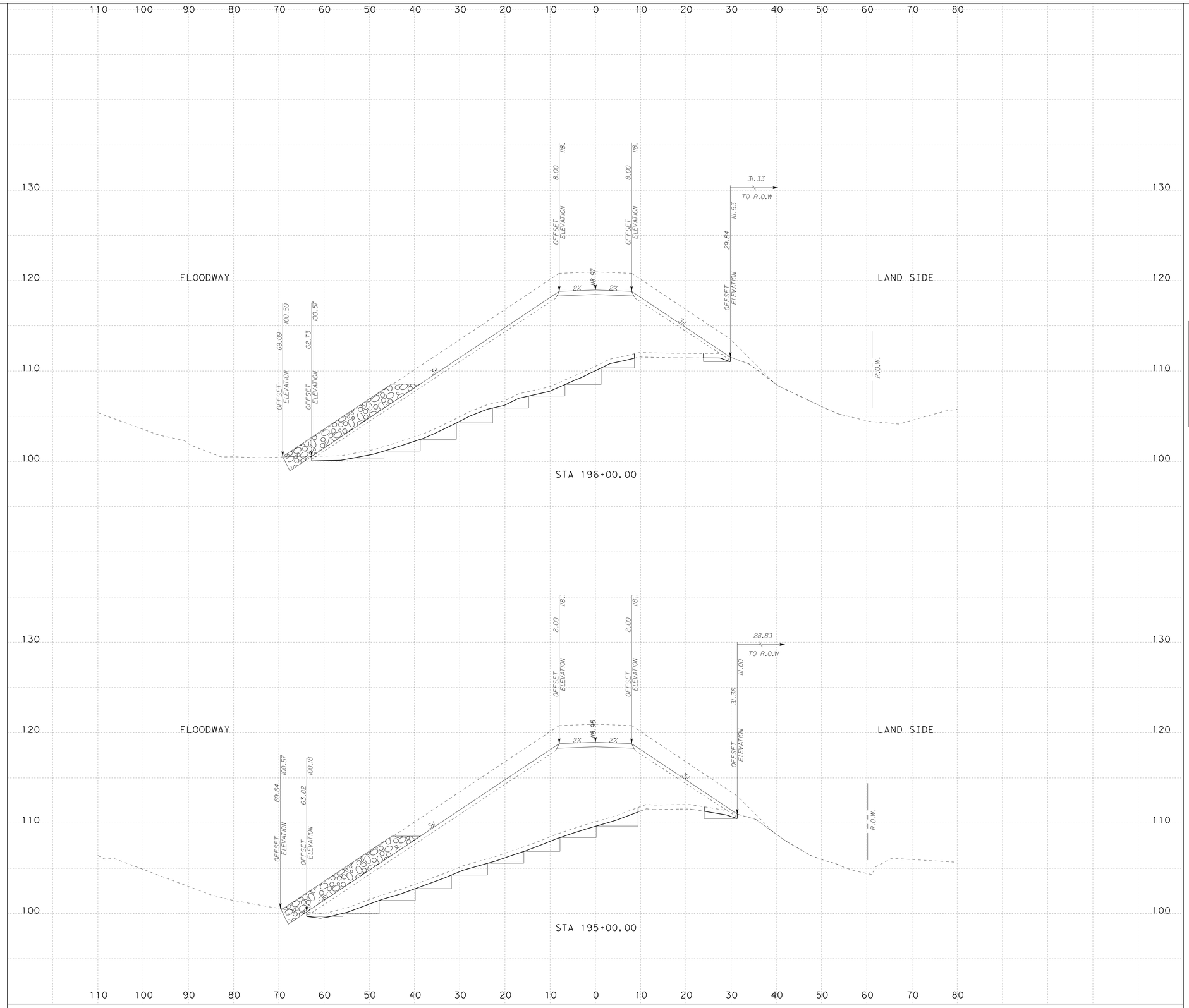

LEGEND

- APPROX DIRECTION OF DRAINAGE
- APPROX PROP GRADING FOR DRAINAGE
- EXIST TOP SOIL TO BE REMOVED (6 IN)
- EXIST ROCK RIPRAP TO BE REMOVED/STOCKPILED
- PROP LEVEE CONSTRUCTION
- PROP MAINTENANCE ROAD
- PROP ROCK RIPRAP
- PROP CONCRETE RIPRAP

NOTES:

SURFACE DRAINAGE SHALL BE ESTABLISHED BY THE CONTRACTOR PRIOR TO AND DURING CONSTRUCTION TO PREVENT WATER FROM PONDING WITHIN OR ADJACENT TO THE LEVEE STRUCTURE.

IT IS INTENDED THAT THE FINAL SECTION OF THE PROPOSED LEVEE SHALL FACILITATE RAPID DRAINAGE AWAY FROM THE LEVEE STRUCTURE.

FINISH GRADING BY THE CONTRACTOR WILL BE REQUIRED (AS SHOWN AND/OR DIRECTED BY THE ENGINEER) TO ACCOMPLISH THIS WORK, AND WILL BE CONSIDERED SUBSIDIARY TO ITEM 35 41.

SCALE: H : 1"=10'
V : 1"=5'

S&B INFRASTRUCTURE, LTD.
Engineering Management Technology
S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by MICHAEL C. RIOJAS P.E. 69690, on Aug 9, 09

PROP CROSS SECTIONS HIDALGO PROTECTIVE LEVEE

SHEET 1 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9

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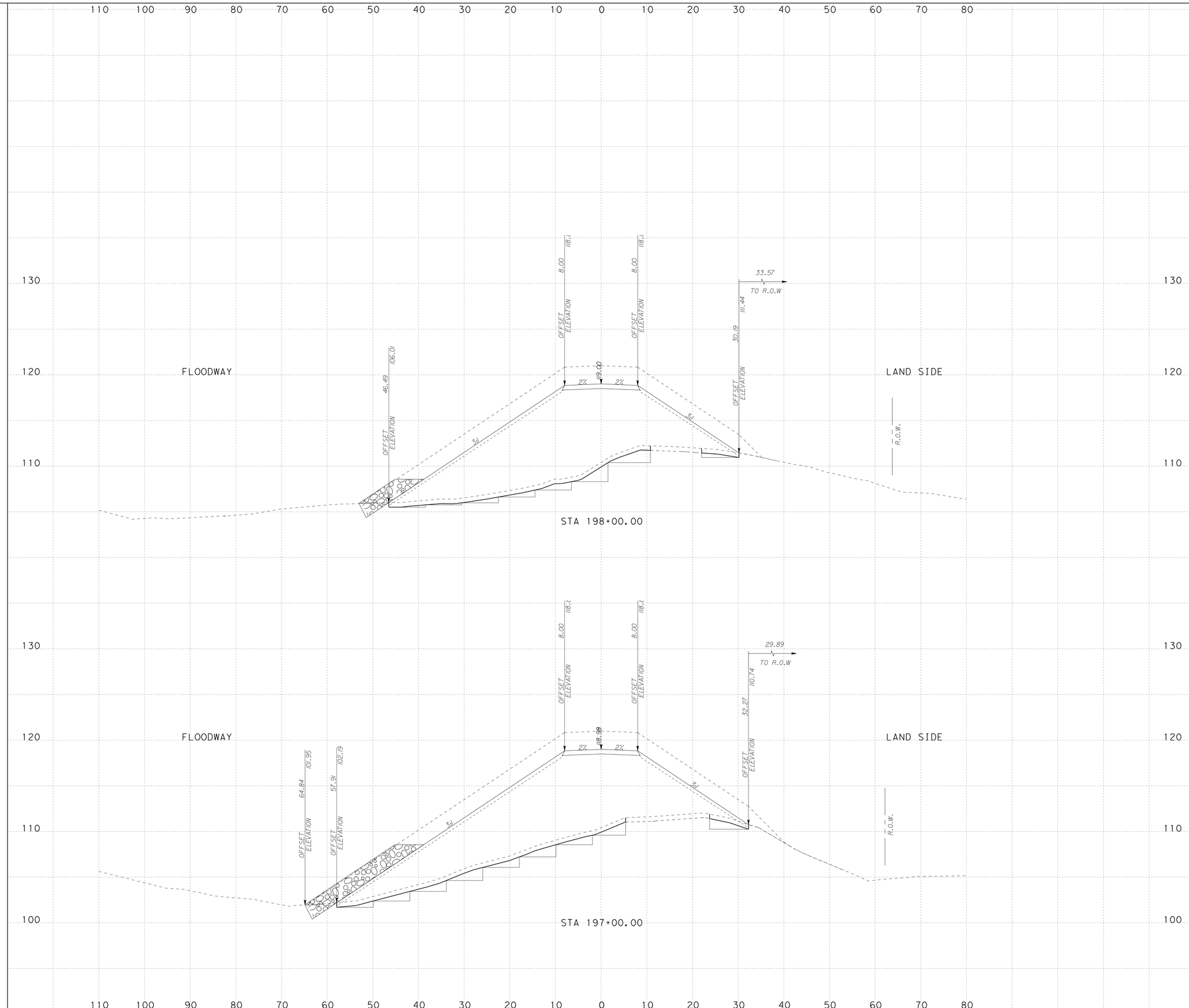

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S&B INFRASTRUCTURE, LTD.
Engineering Management Technology
S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED PROFESSIONAL ENGINEER

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PROP CROSS SECTIONS HIDALGO PROTECTIVE LEVEE

SHEET 2 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9A

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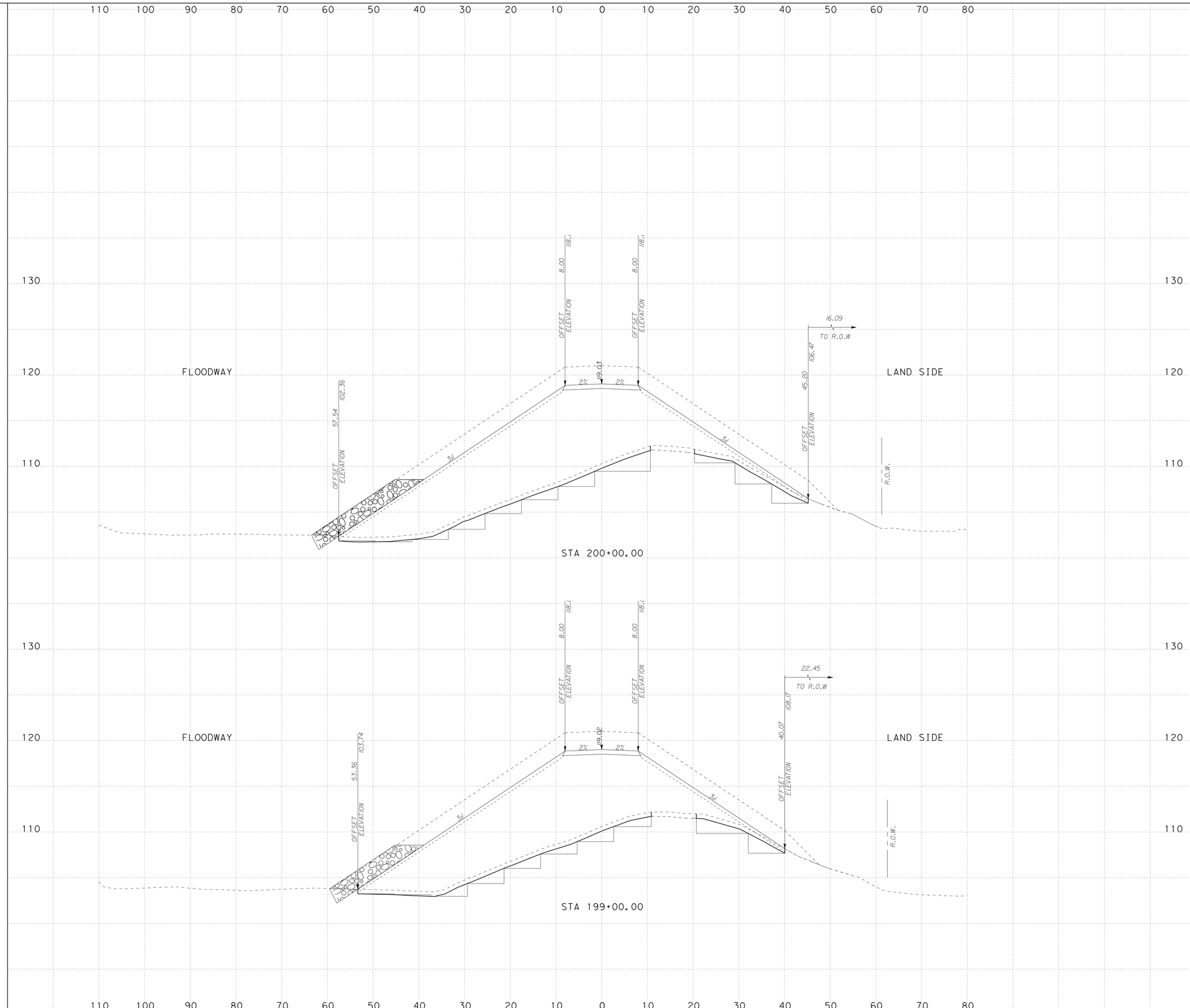

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S&B INFRASTRUCTURE, LTD.
Engineering Management Technology

S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED PROFESSIONAL ENGINEER

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PROP CROSS SECTIONS
HIDALGO PROTECTIVE LEVEE

SHEET 3 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9B

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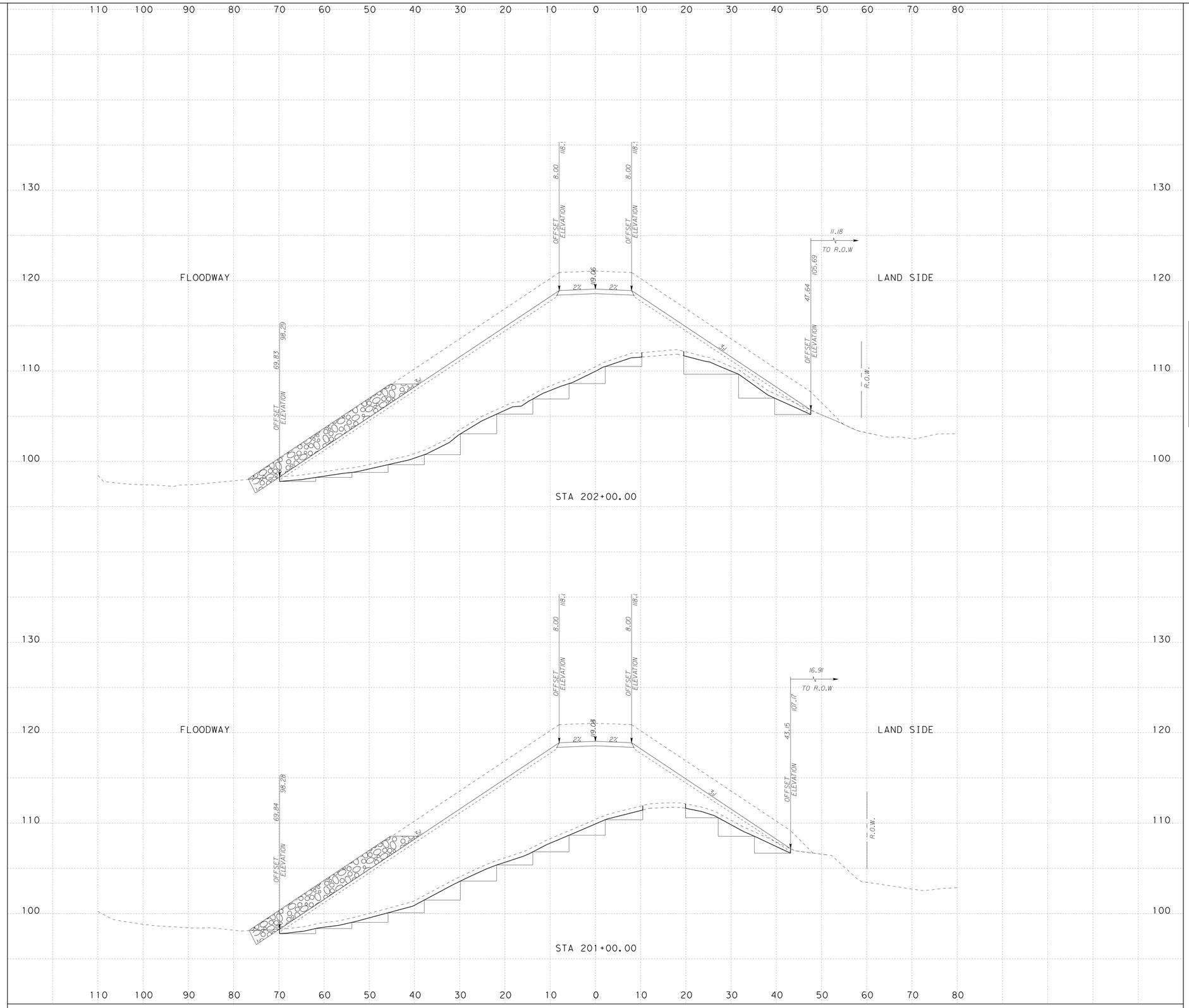

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S&B INFRASTRUCTURE, LTD.
Engineering Management Technology
S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED PROFESSIONAL ENGINEER

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PROP CROSS SECTIONS HIDALGO PROTECTIVE LEVEE

SHEET 4 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9C

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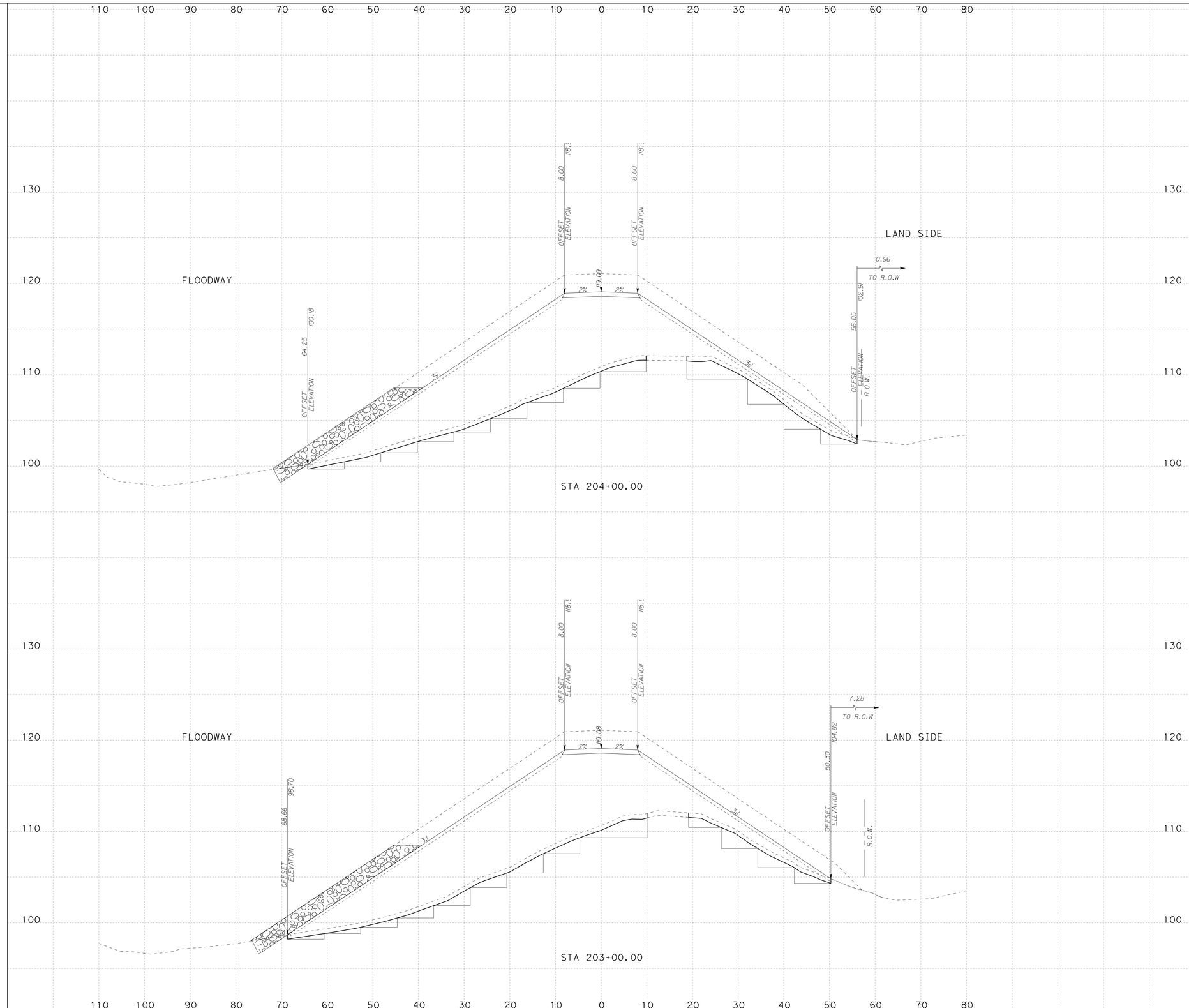

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SCALE: H : 1"=10'
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Engineering Management Technology
S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED PROFESSIONAL ENGINEER

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PROP CROSS SECTIONS HIDALGO PROTECTIVE LEVEE

SHEET 5 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9D

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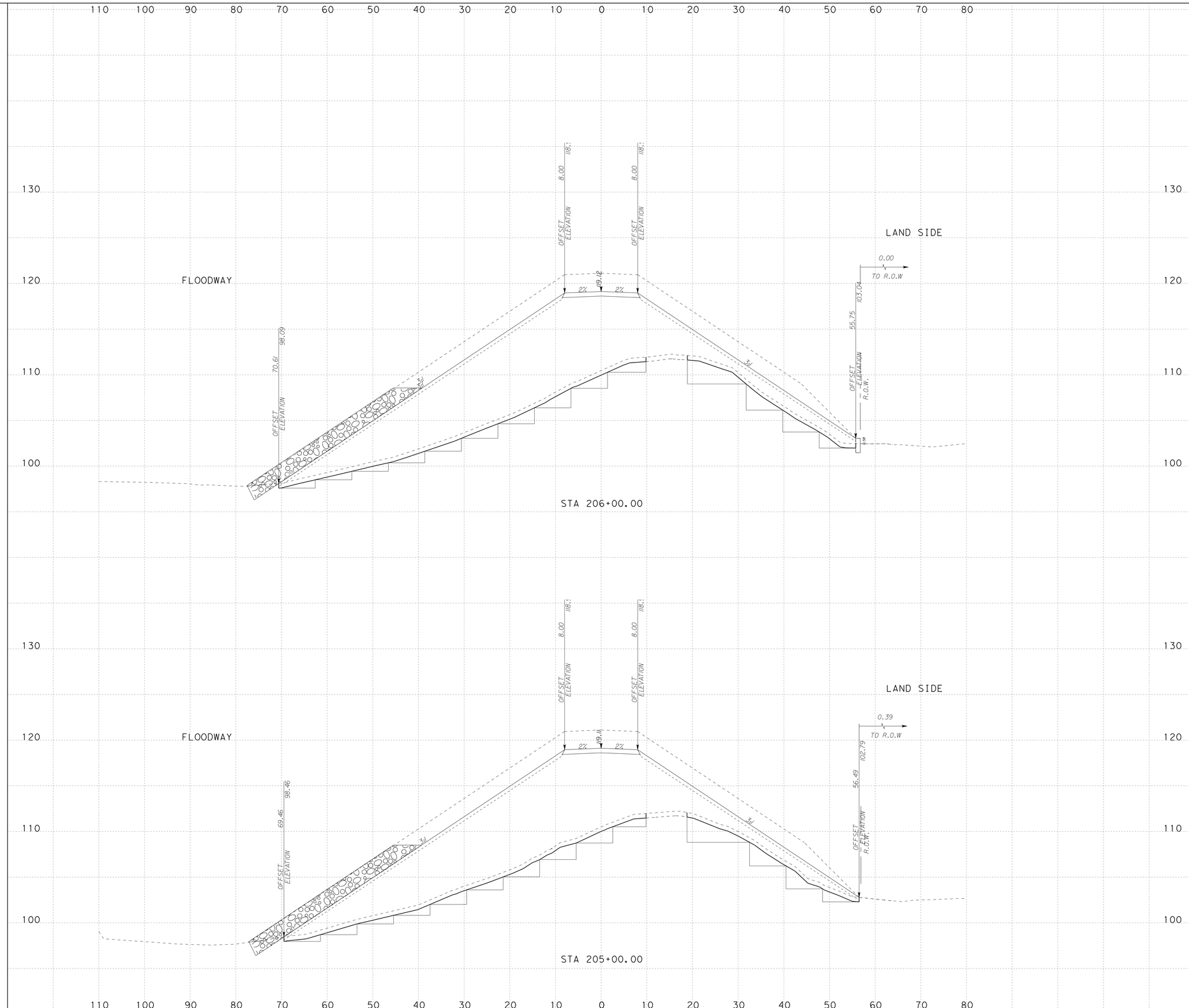

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SCALE: H : 1"=10'
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S&B INFRASTRUCTURE, LTD.
Engineering Management Technology
S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED PROFESSIONAL ENGINEER

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PROP CROSS SECTIONS HIDALGO PROTECTIVE LEVEE

SHEET 6 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9E

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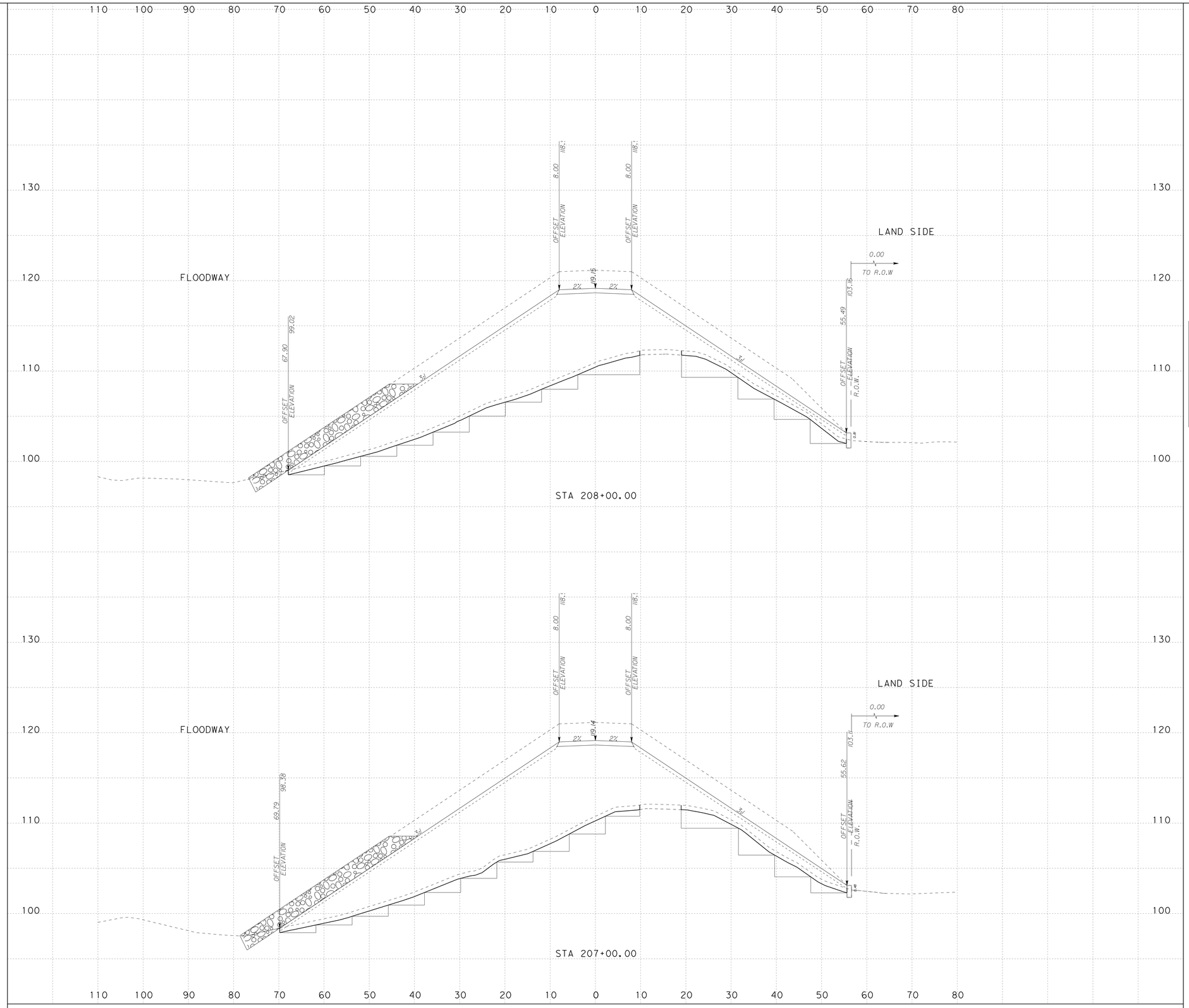

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SCALE: H : 1"=10'
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S&B INFRASTRUCTURE, LTD.
Engineering Management Technology
S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by MICHAEL C. RIOJAS P.E. 69690, on Dec 9, 09

PROP CROSS SECTIONS HIDALGO PROTECTIVE LEVEE

SHEET 7 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9F

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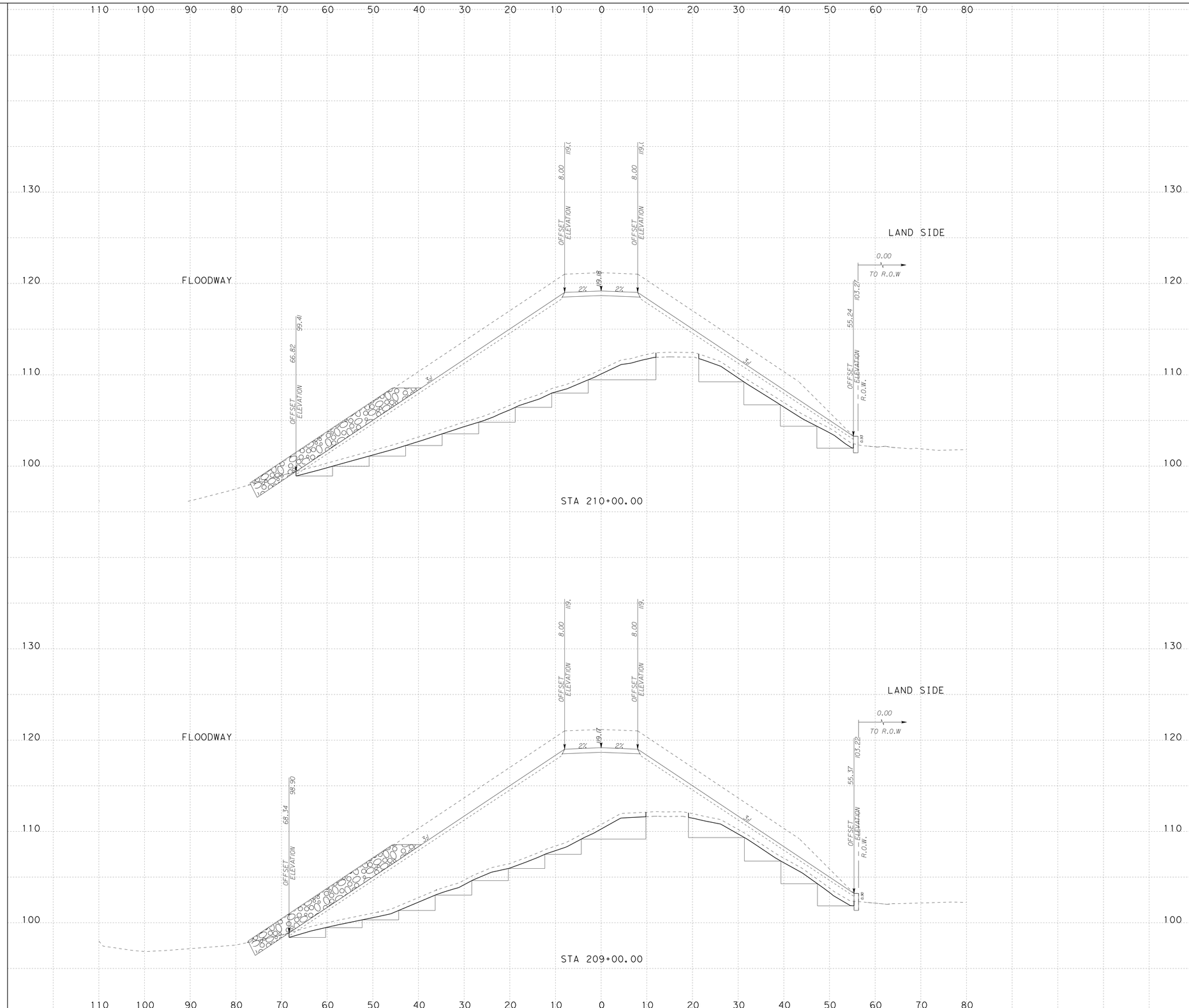

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SCALE: H : 1"=10'
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S&B INFRASTRUCTURE, LTD.
Engineering Management Technology
S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED PROFESSIONAL ENGINEER

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PROP CROSS SECTIONS HIDALGO PROTECTIVE LEVEE

SHEET 8 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9G

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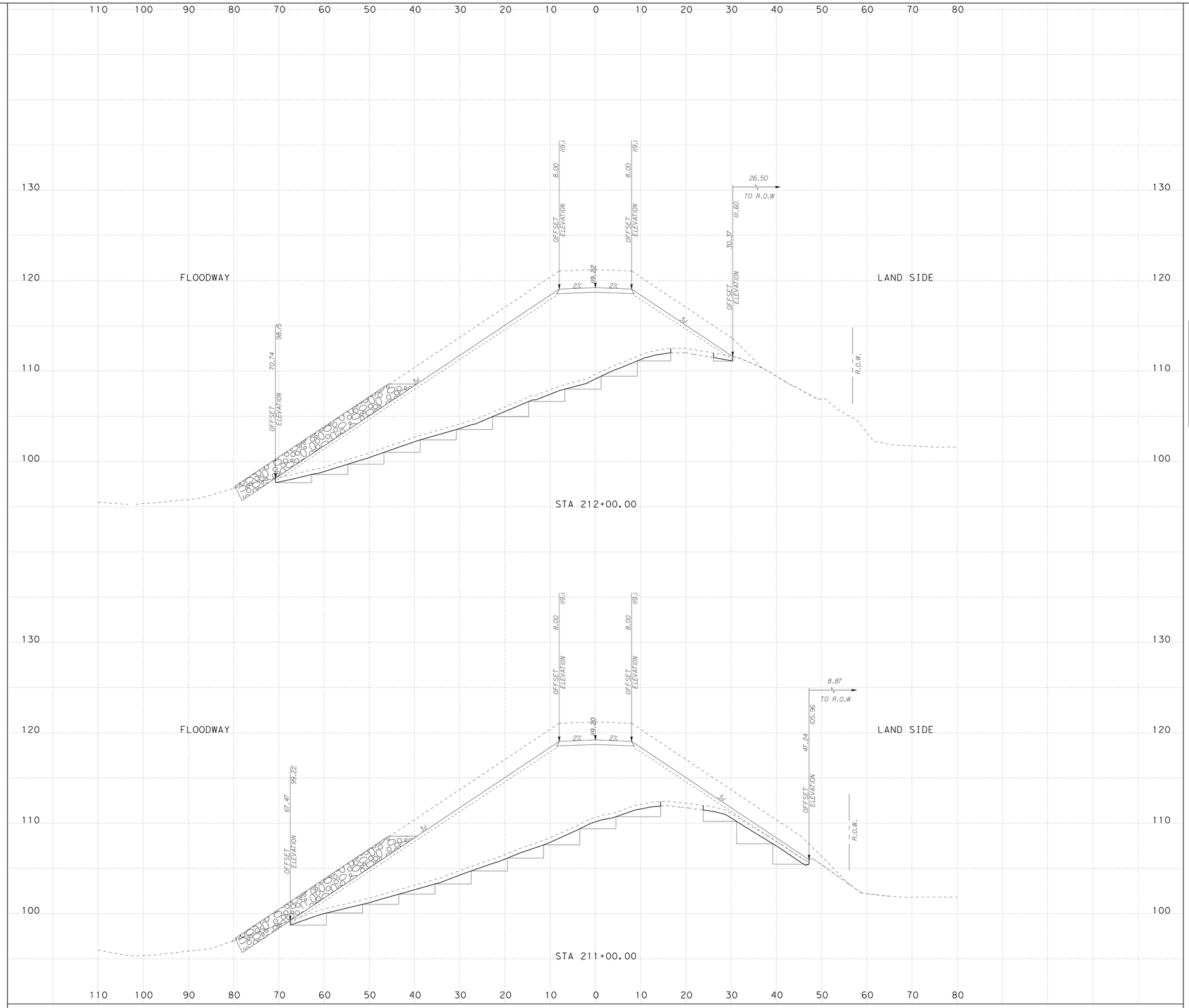

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S&B INFRASTRUCTURE, LTD.
Engineering Management Technology
S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED PROFESSIONAL ENGINEER

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PROP CROSS SECTIONS HIDALGO PROTECTIVE LEVEE

SHEET 9 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9H

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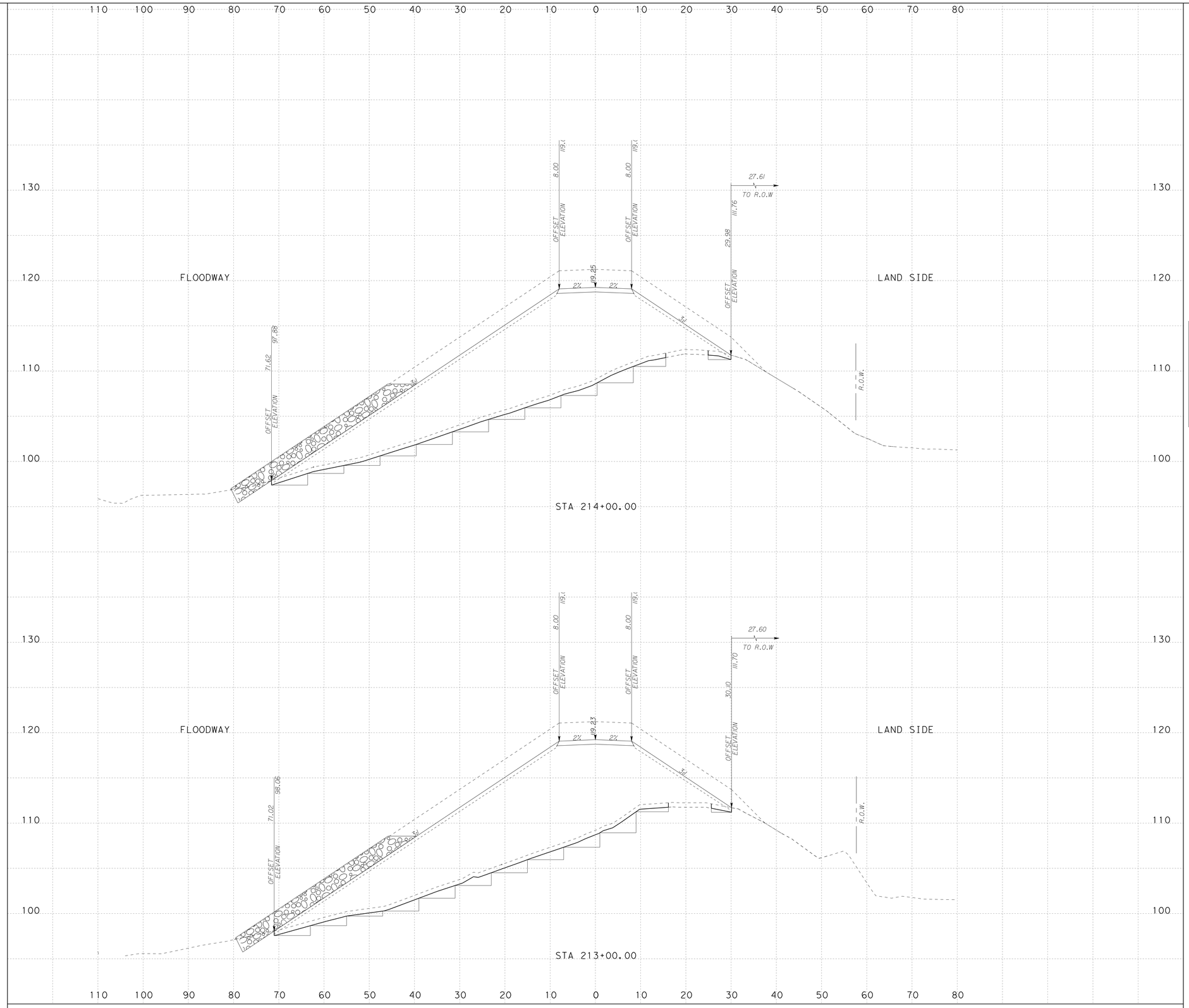

LEGEND

- APPROX DIRECTION OF DRAINAGE
- APPROX PROP GRADING FOR DRAINAGE
- EXIST TOP SOIL TO BE REMOVED (6 IN)
- EXIST ROCK RIPRAP TO BE REMOVED/STOCKPILED
- PROP LEVEE CONSTRUCTION
- PROP MAINTENANCE ROAD
- PROP ROCK RIPRAP
- PROP CONCRETE RIPRAP

NOTES:

SURFACE DRAINAGE SHALL BE ESTABLISHED BY THE CONTRACTOR PRIOR TO AND DURING CONSTRUCTION TO PREVENT WATER FROM PONDING WITHIN OR ADJACENT TO THE LEVEE STRUCTURE.

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SCALE: H : 1"=10'
V : 1"=5'

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PROP CROSS SECTIONS HIDALGO PROTECTIVE LEVEE

SHEET 10 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9I

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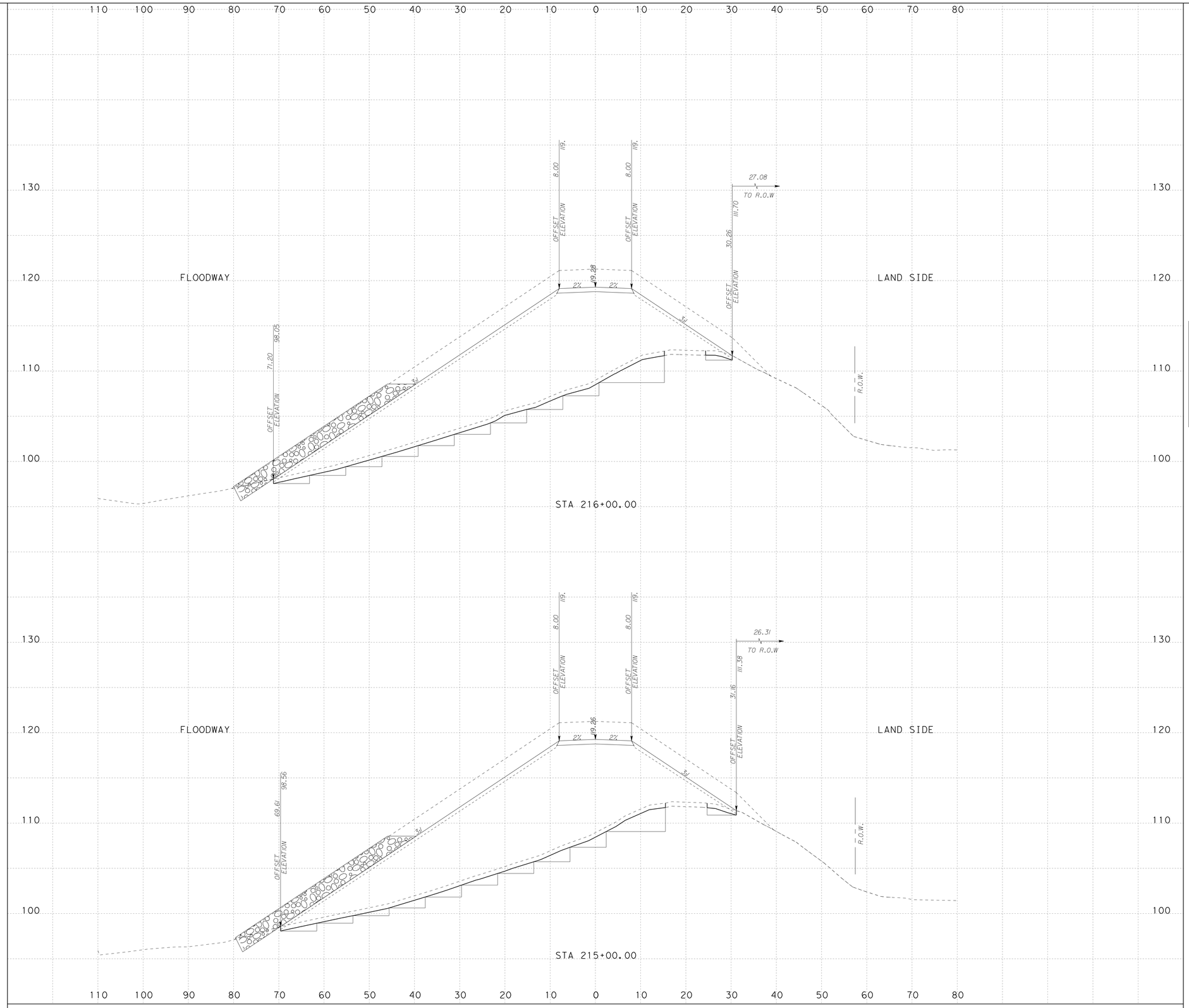

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PROP CROSS SECTIONS HIDALGO PROTECTIVE LEVEE

SHEET 11 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9J

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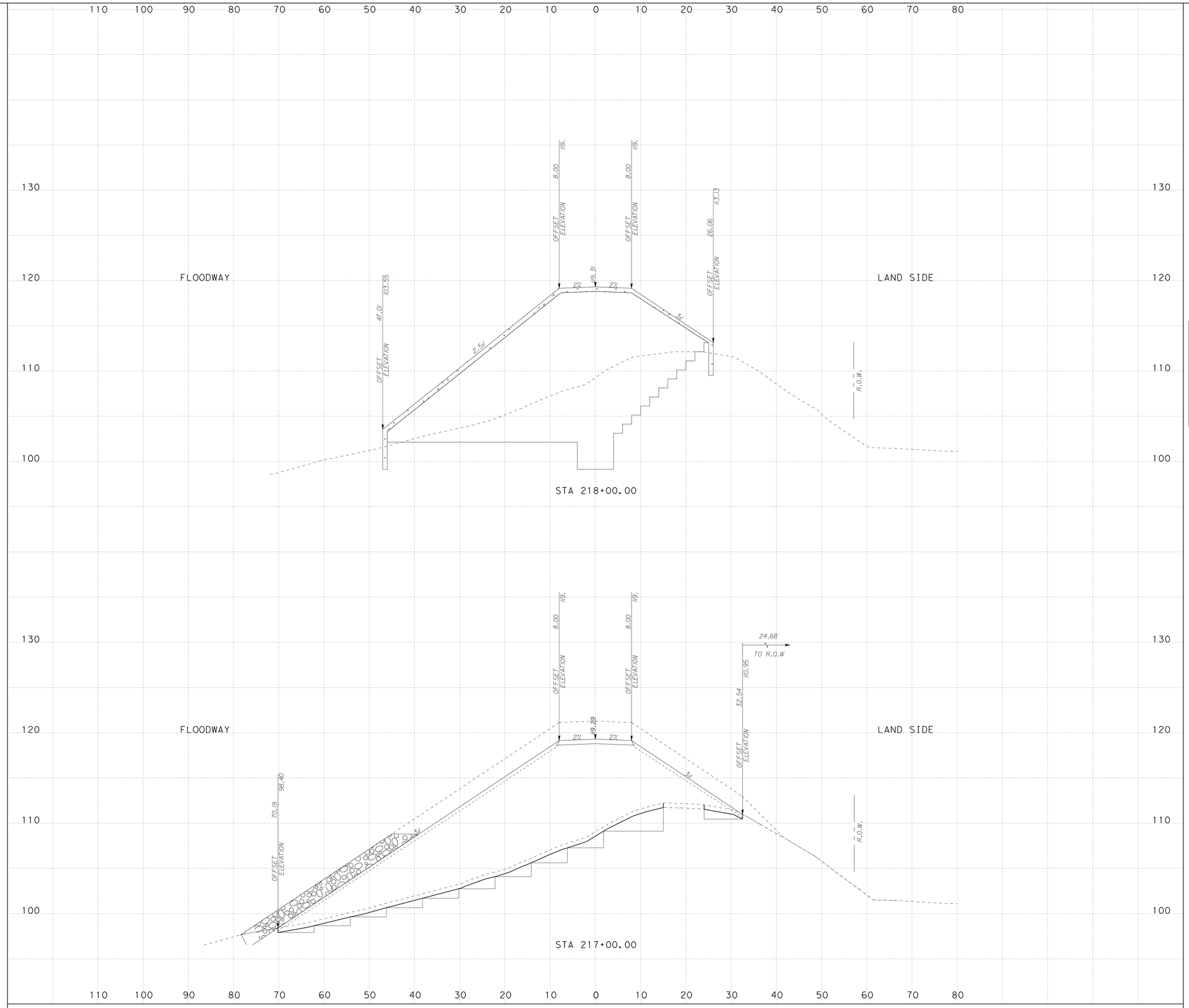

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PROP CROSS SECTIONS HIDALGO PROTECTIVE LEVEE

SHEET 12 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9K

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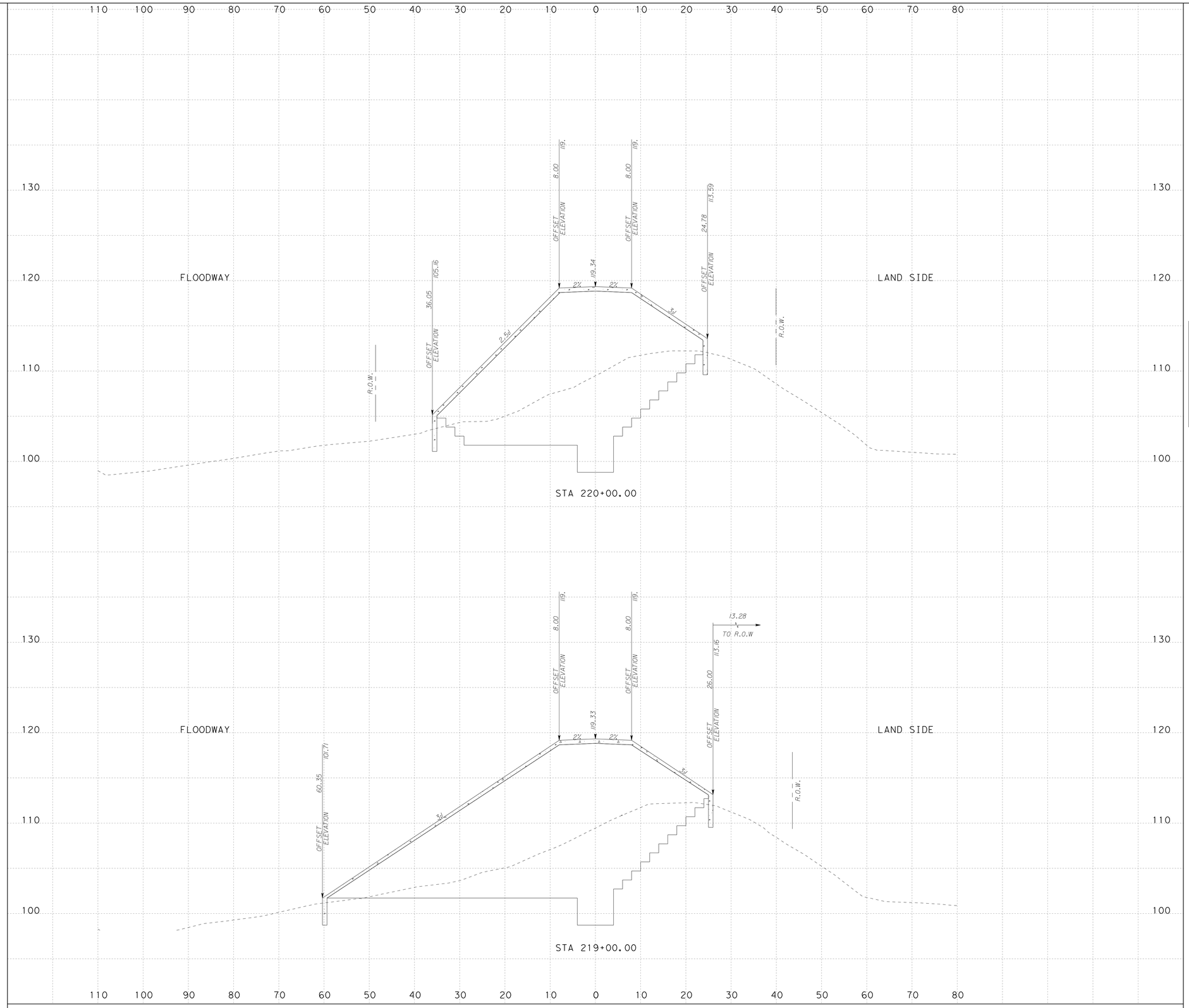

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PROP CROSS SECTIONS HIDALGO PROTECTIVE LEVEE

SHEET 13 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9L

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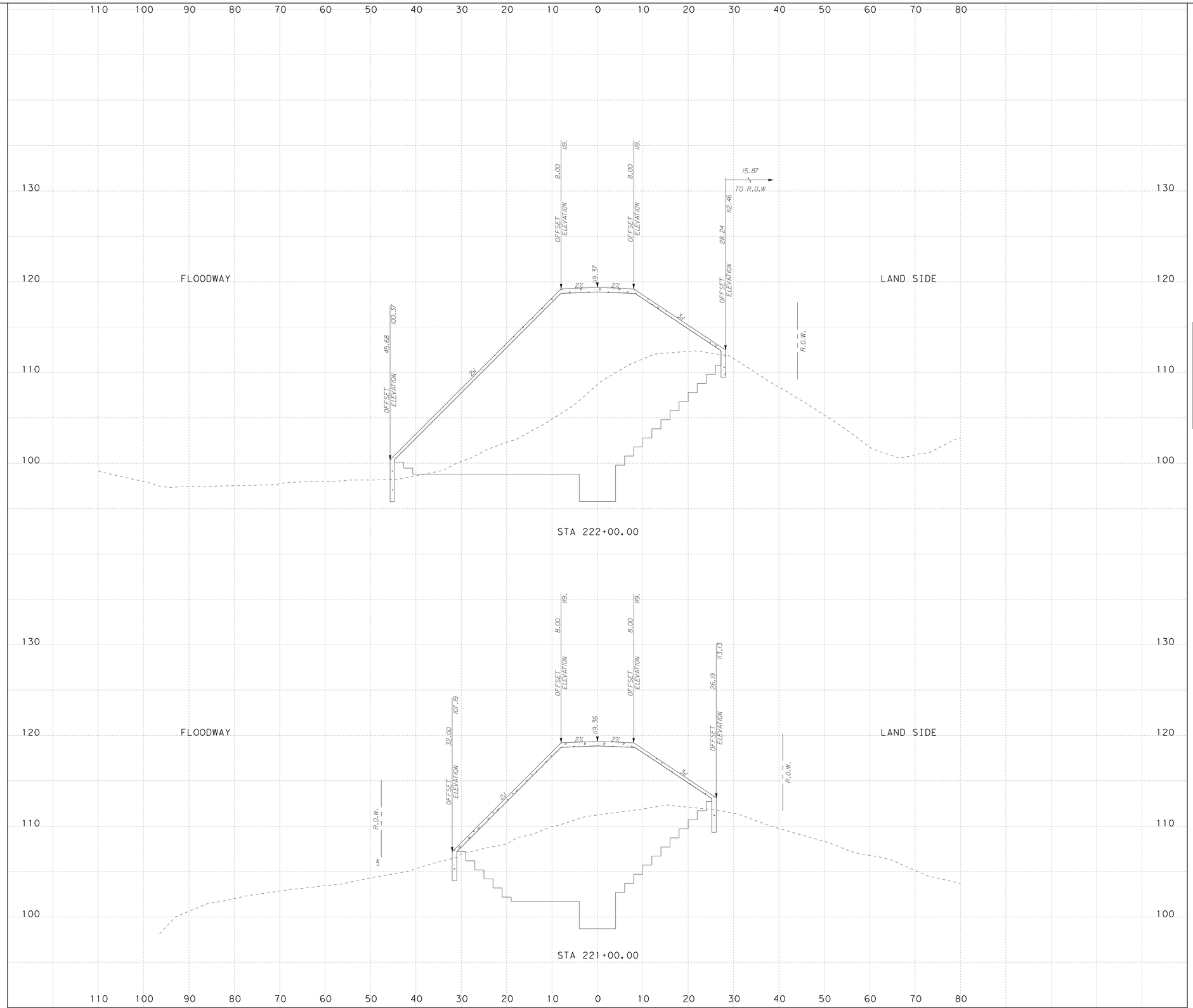

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PROP CROSS SECTIONS HIDALGO PROTECTIVE LEVEE

SHEET 14 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9M

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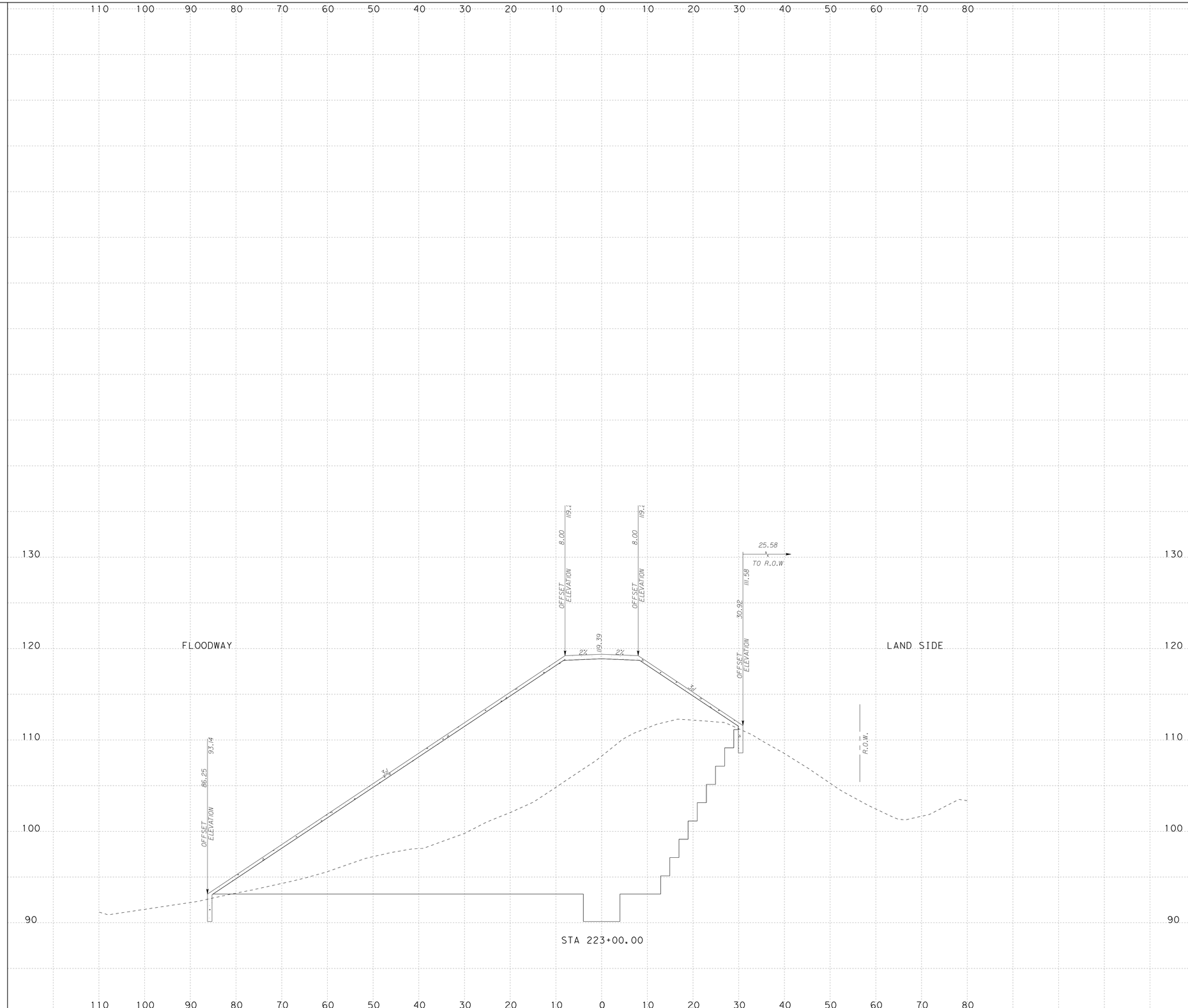

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PROP CROSS SECTIONS
HIDALGO PROTECTIVE LEVEE

SHEET 15 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9N

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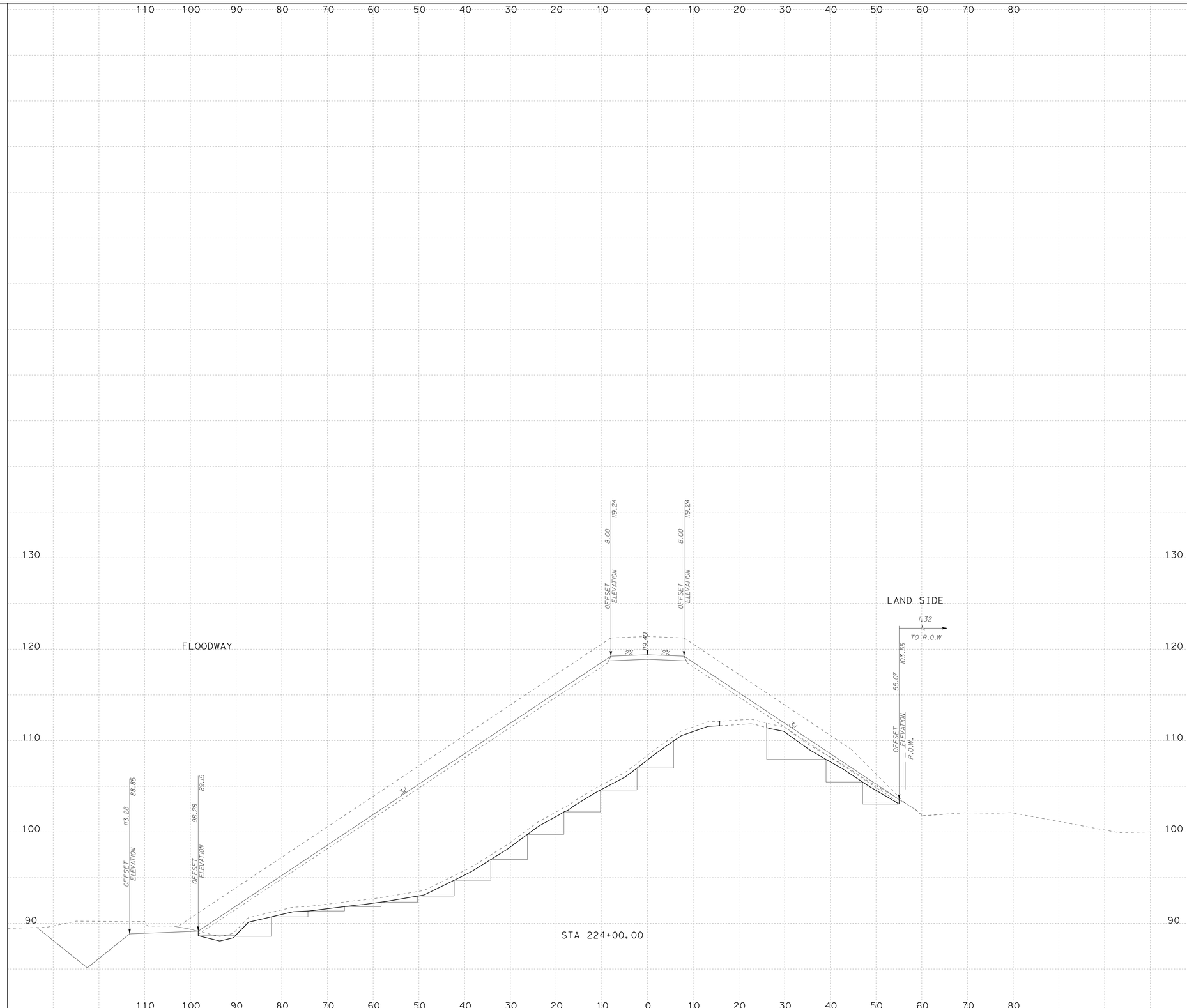

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PROP CROSS SECTIONS
HIDALGO PROTECTIVE LEVEE

SHEET 16 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				90

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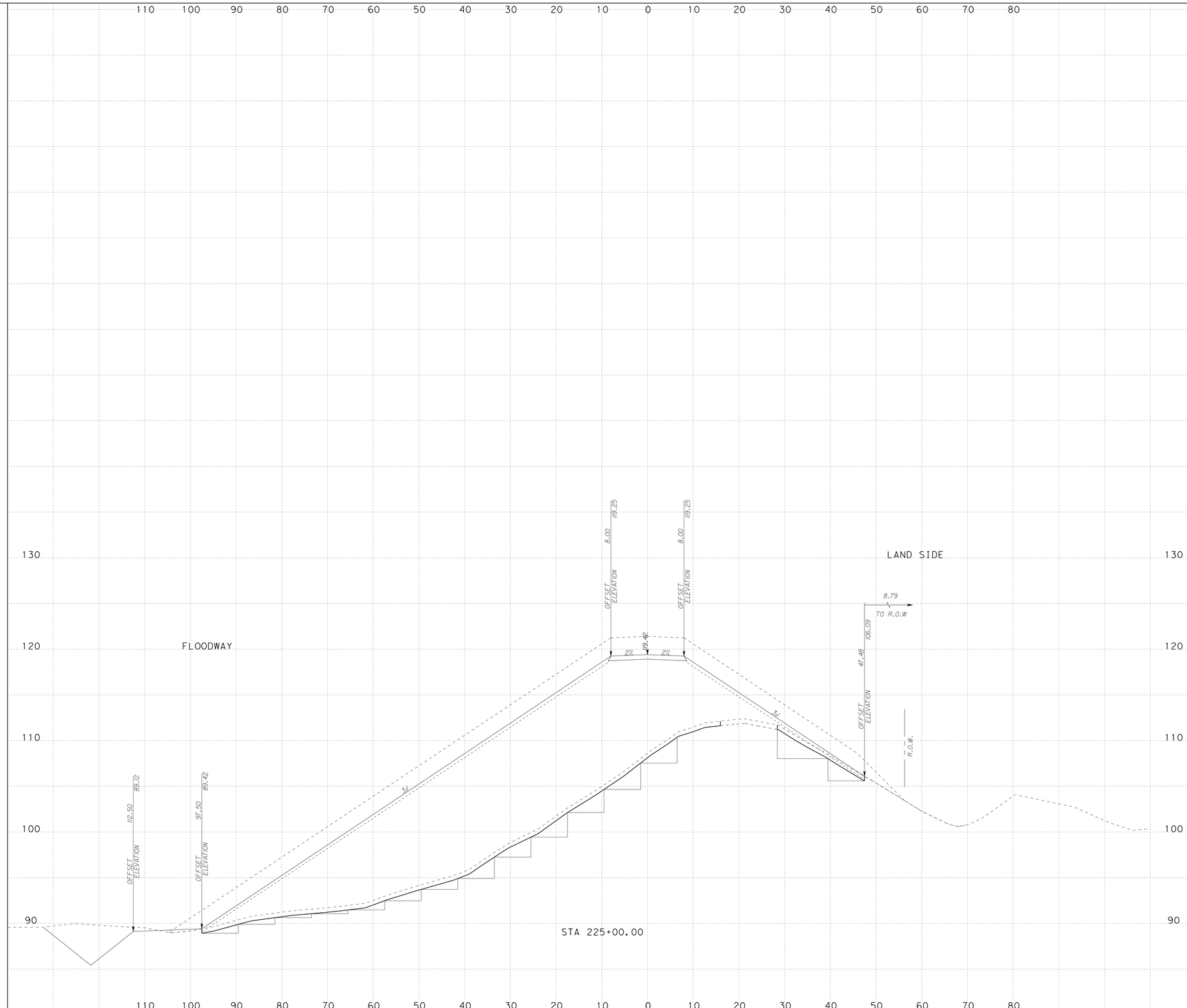

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PROP CROSS SECTIONS
HIDALGO PROTECTIVE LEVEE

SHEET 17 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
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REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9P

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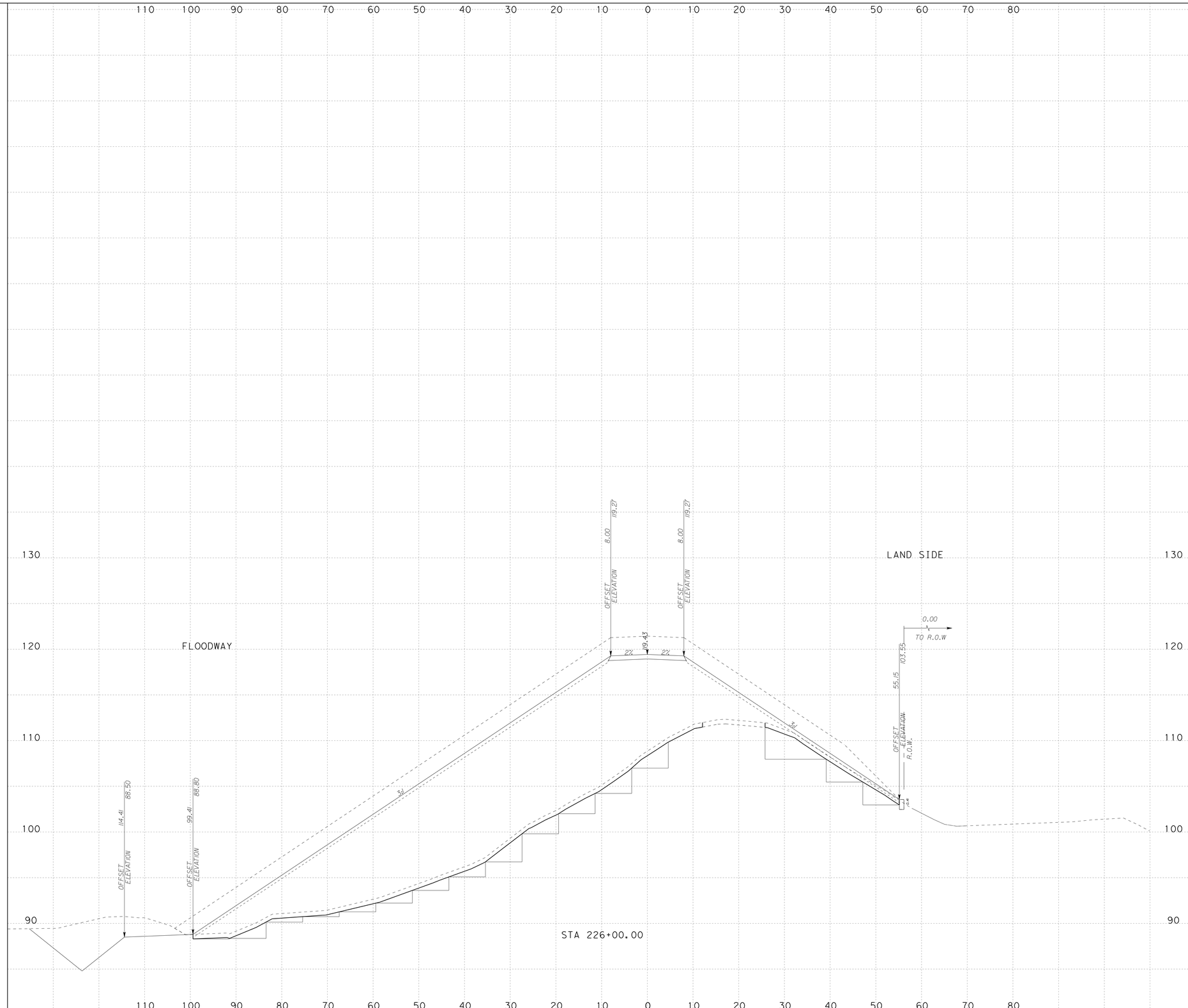

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PROP CROSS SECTIONS
HIDALGO PROTECTIVE LEVEE

SHEET 18 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9Q

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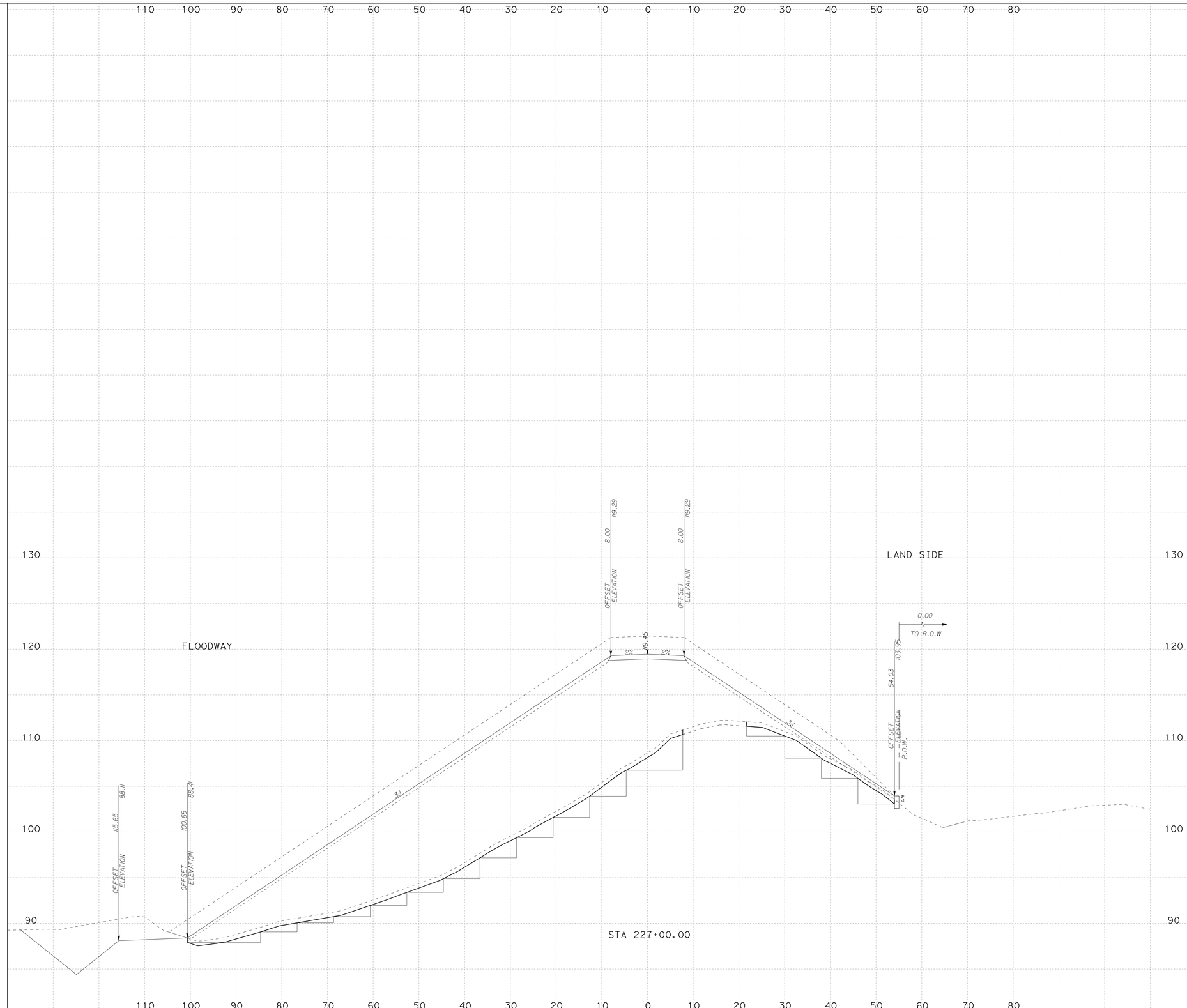

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PROP CROSS SECTIONS
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SHEET 19 OF 28 SHEET

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REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9R

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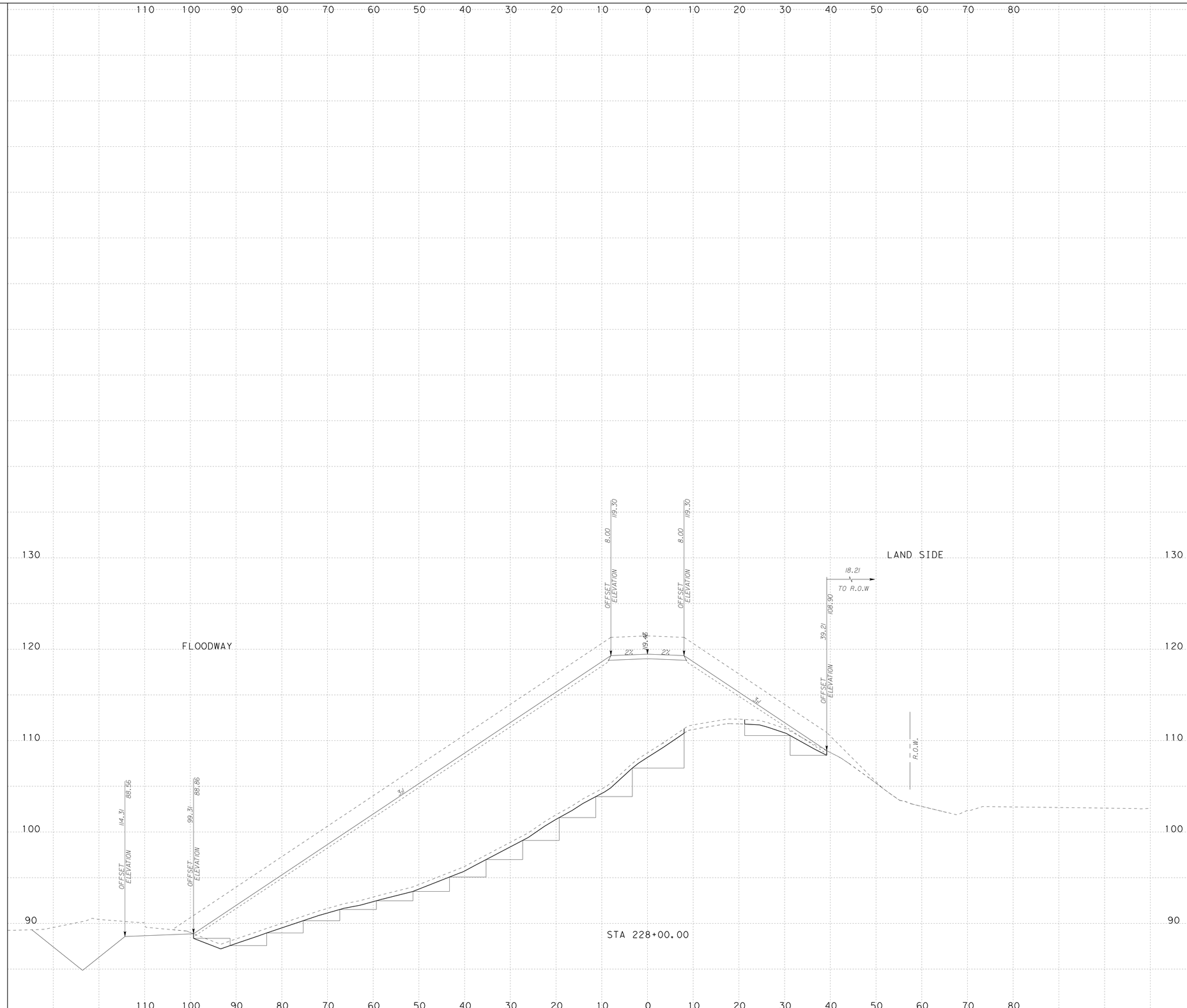

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PROP CROSS SECTIONS
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SHEET 20 OF 28 SHEET

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REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9S

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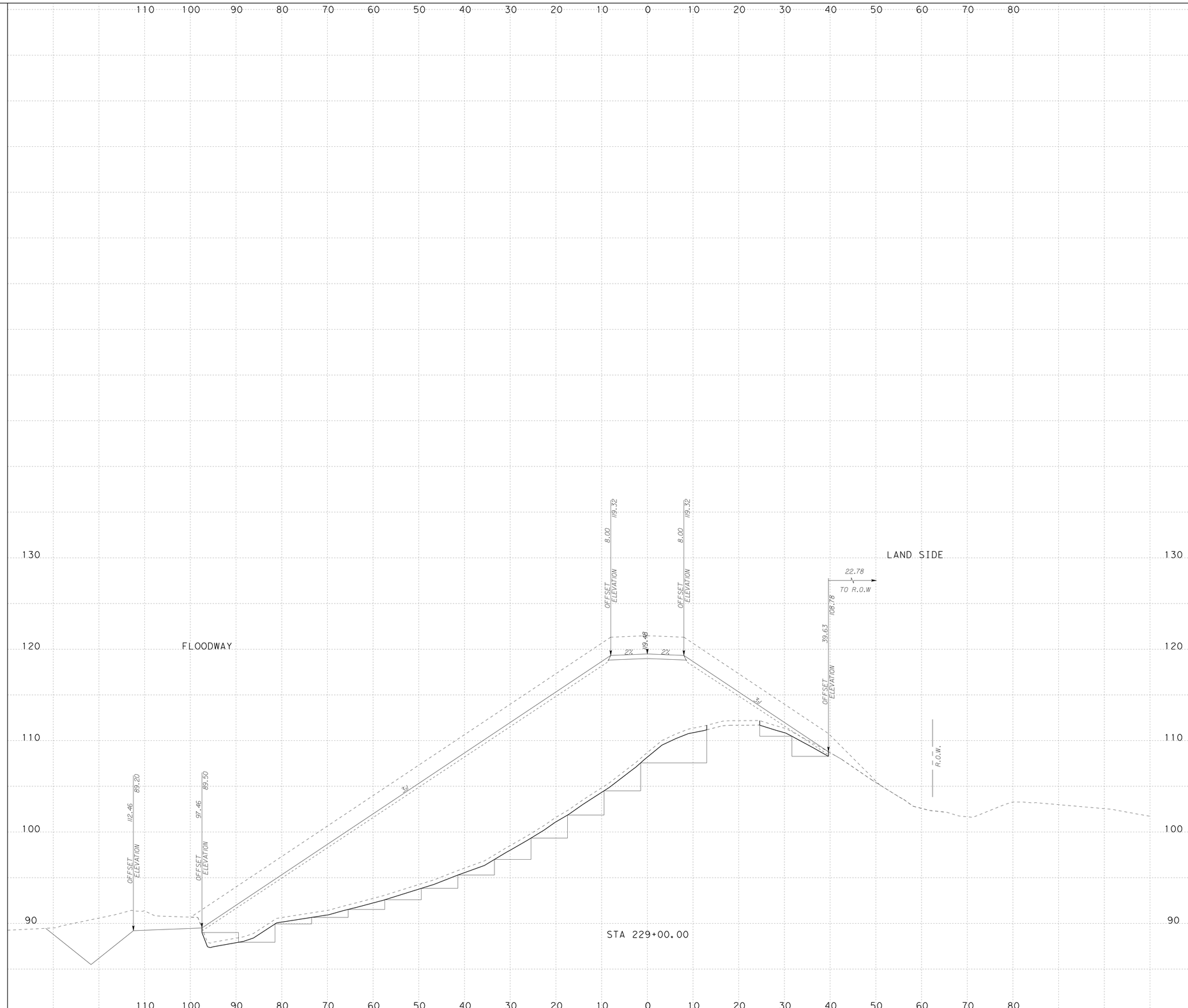

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S&B INFRASTRUCTURE, LTD.
Engineering Management Technology

S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by MICHAEL C. RIOJAS P.E. 69690, on July 9, 2009

PROP CROSS SECTIONS
HIDALGO PROTECTIVE LEVEE

SHEET 21 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9T

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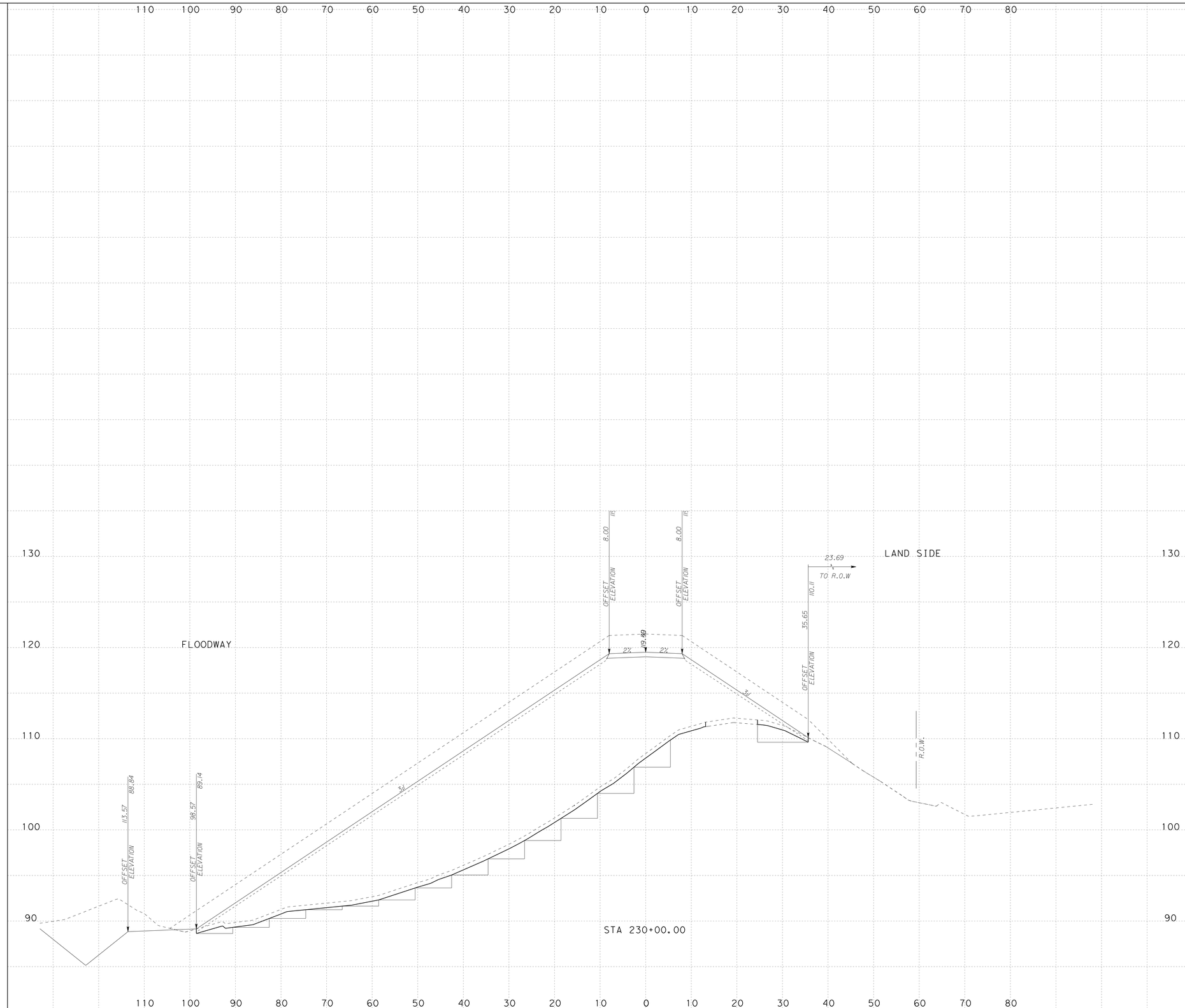

LEGEND

- APPROX DIRECTION OF DRAINAGE
- APPROX PROP GRADING FOR DRAINAGE
- EXIST TOP SOIL TO BE REMOVED (6 IN)
- EXIST ROCK RIPRAP TO BE REMOVED/STOCKPILED
- PROP LEVEE CONSTRUCTION
- PROP MAINTENANCE ROAD
- PROP ROCK RIPRAP
- PROP CONCRETE RIPRAP

NOTES:

SURFACE DRAINAGE SHALL BE ESTABLISHED BY THE CONTRACTOR PRIOR TO AND DURING CONSTRUCTION TO PREVENT WATER FROM PONDING WITHIN OR ADJACENT TO THE LEVEE STRUCTURE.

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SCALE: H : 1"=10'
V : 1"=5'

S&B INFRASTRUCTURE, LTD.
Engineering Management Technology

S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
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REGISTERED PROFESSIONAL ENGINEER

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PROP CROSS SECTIONS
HIDALGO PROTECTIVE LEVEE

SHEET 22 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9U

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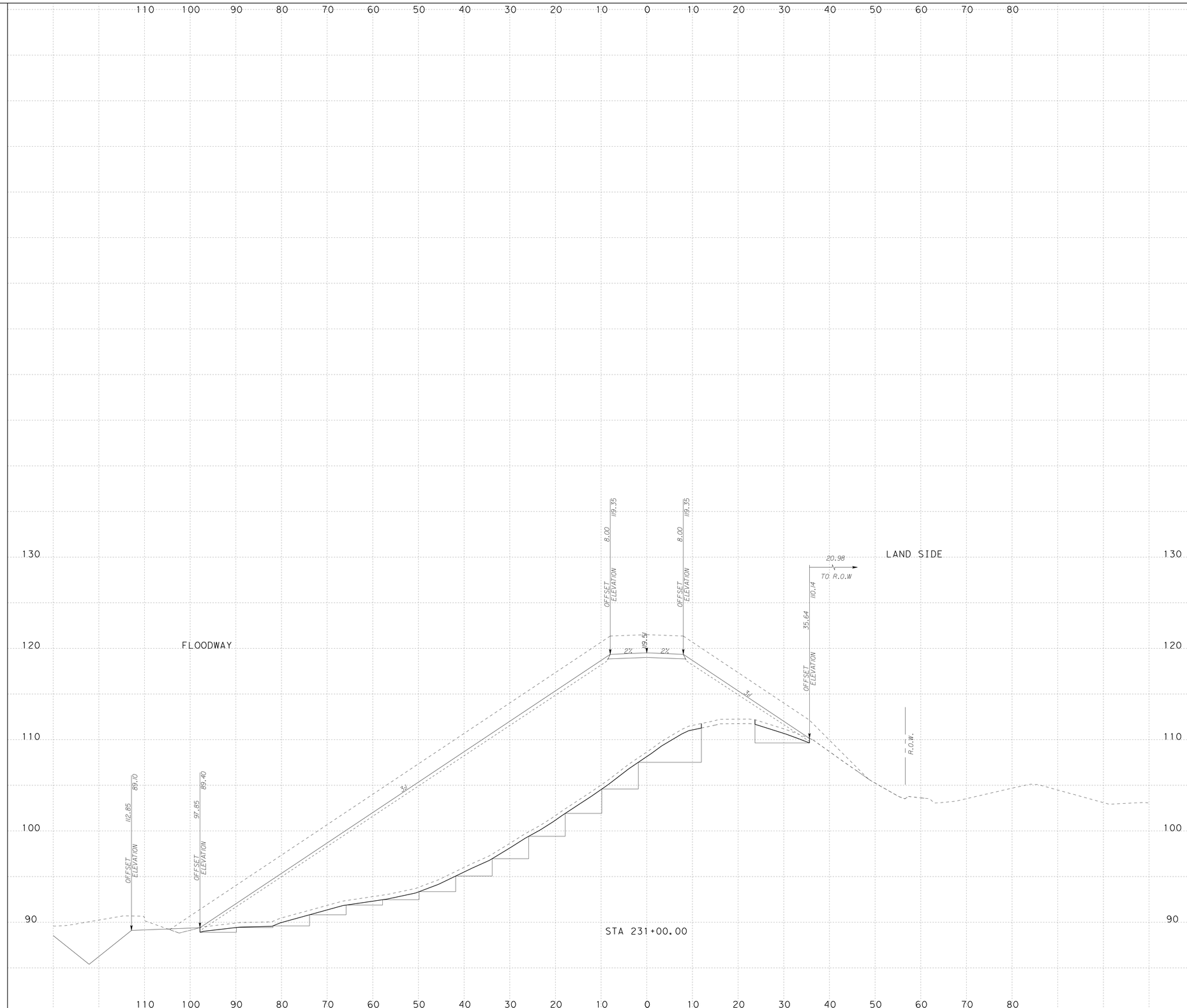

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S&B INFRASTRUCTURE, LTD.
Engineering Management Technology

S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED PROFESSIONAL ENGINEER

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PROP CROSS SECTIONS
HIDALGO PROTECTIVE LEVEE

SHEET 23 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9V

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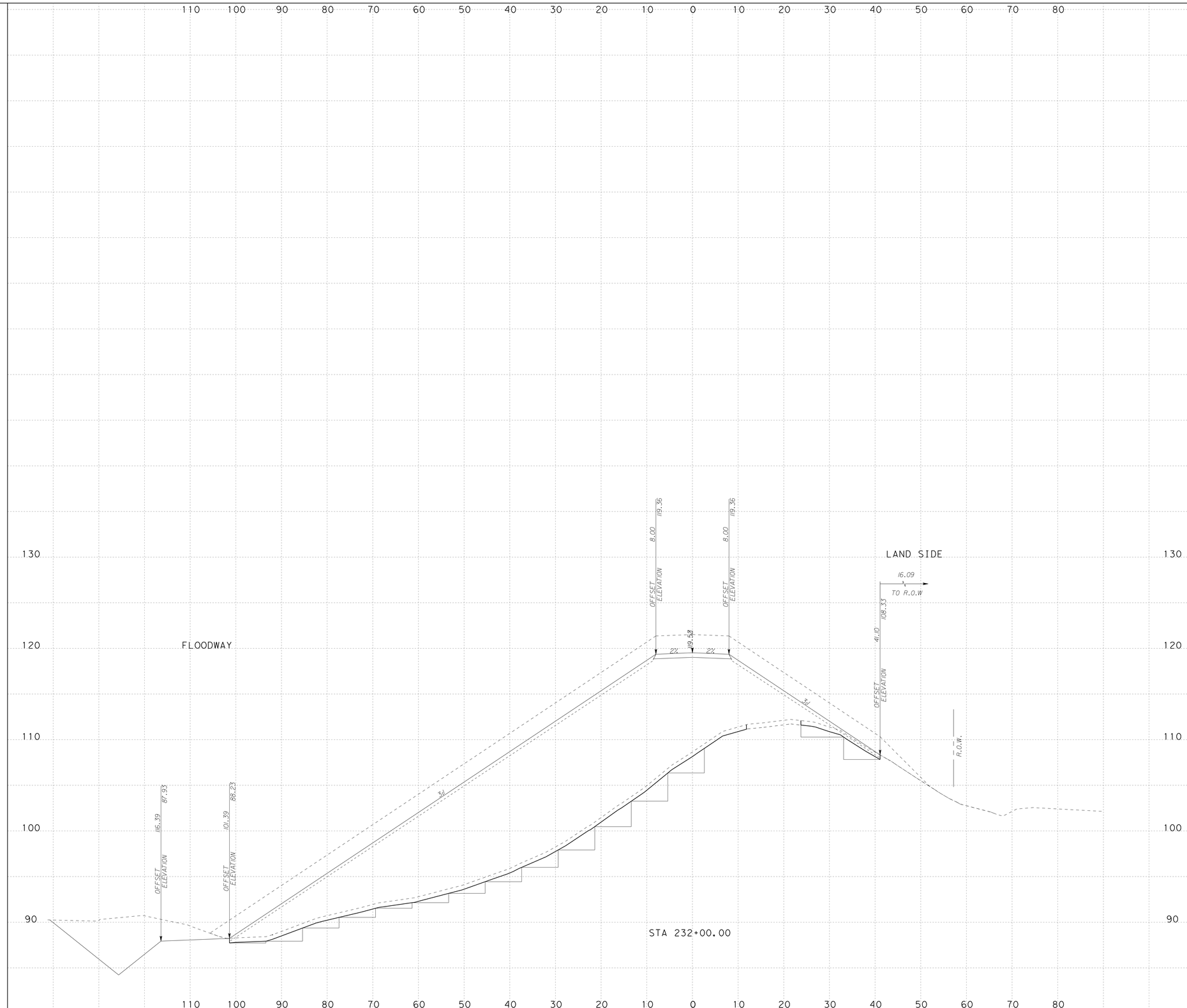

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S&B INFRASTRUCTURE, LTD.
Engineering Management Technology

S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED PROFESSIONAL ENGINEER

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PROP CROSS SECTIONS
HIDALGO PROTECTIVE LEVEE

SHEET 24 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9W

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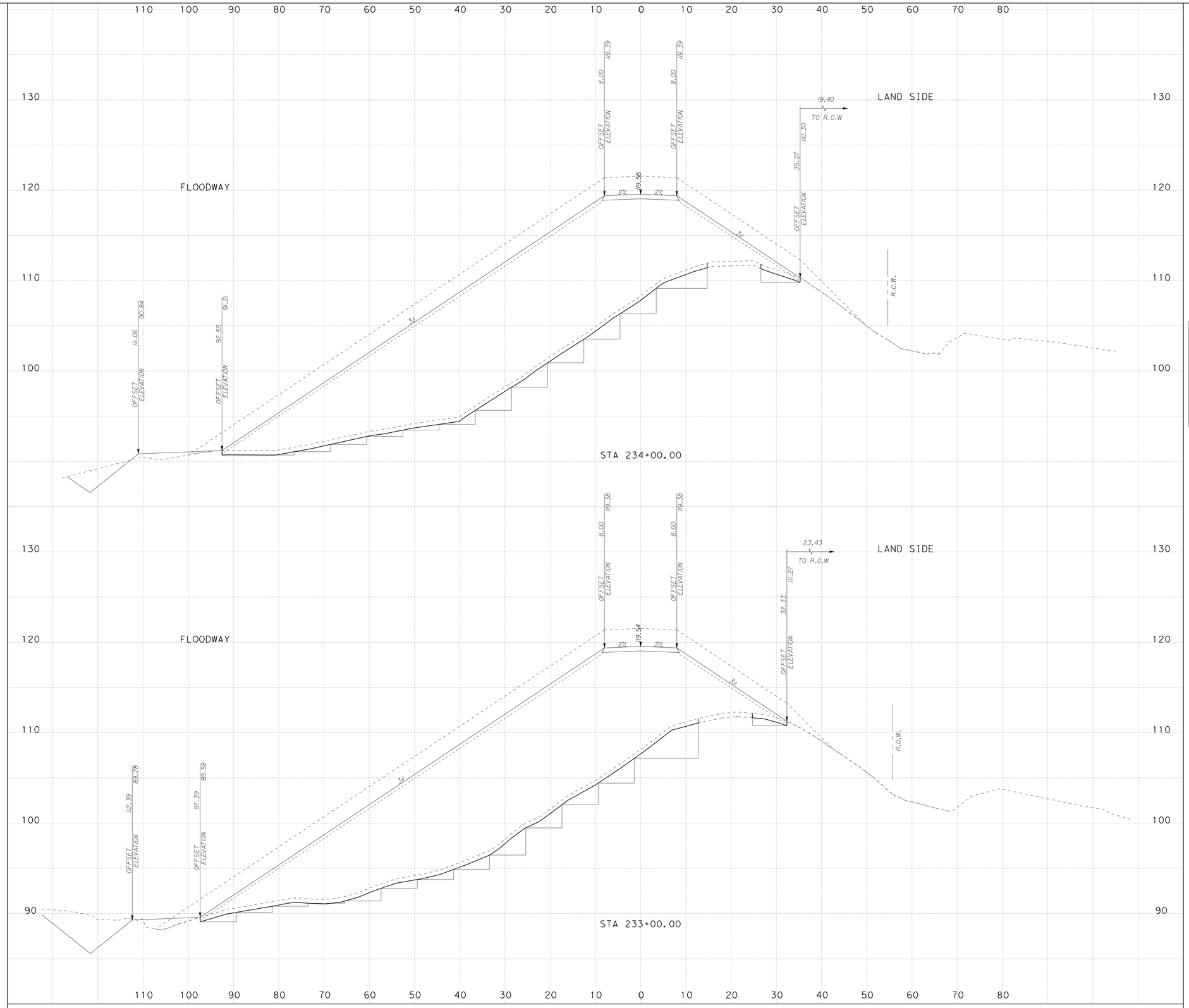

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S&B INFRASTRUCTURE, LTD.
Engineering Management Technology
S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED PROFESSIONAL ENGINEER

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PROP CROSS SECTIONS HIDALGO PROTECTIVE LEVEE

SHEET 25 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9X

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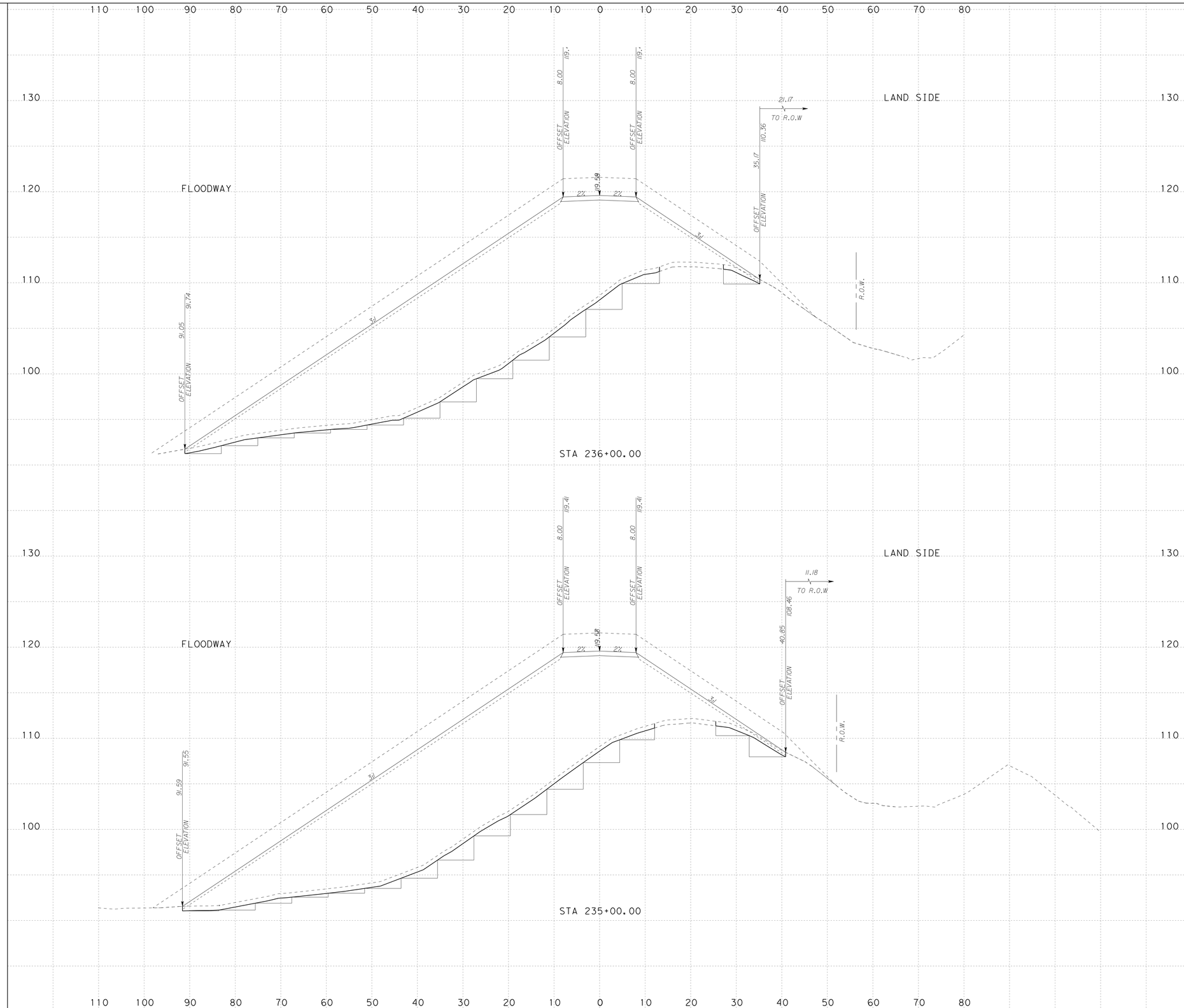

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S&B INFRASTRUCTURE, LTD.
Engineering Management Technology

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STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED PROFESSIONAL ENGINEER

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PROP CROSS SECTIONS
HIDALGO PROTECTIVE LEVEE

SHEET 26 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9Y

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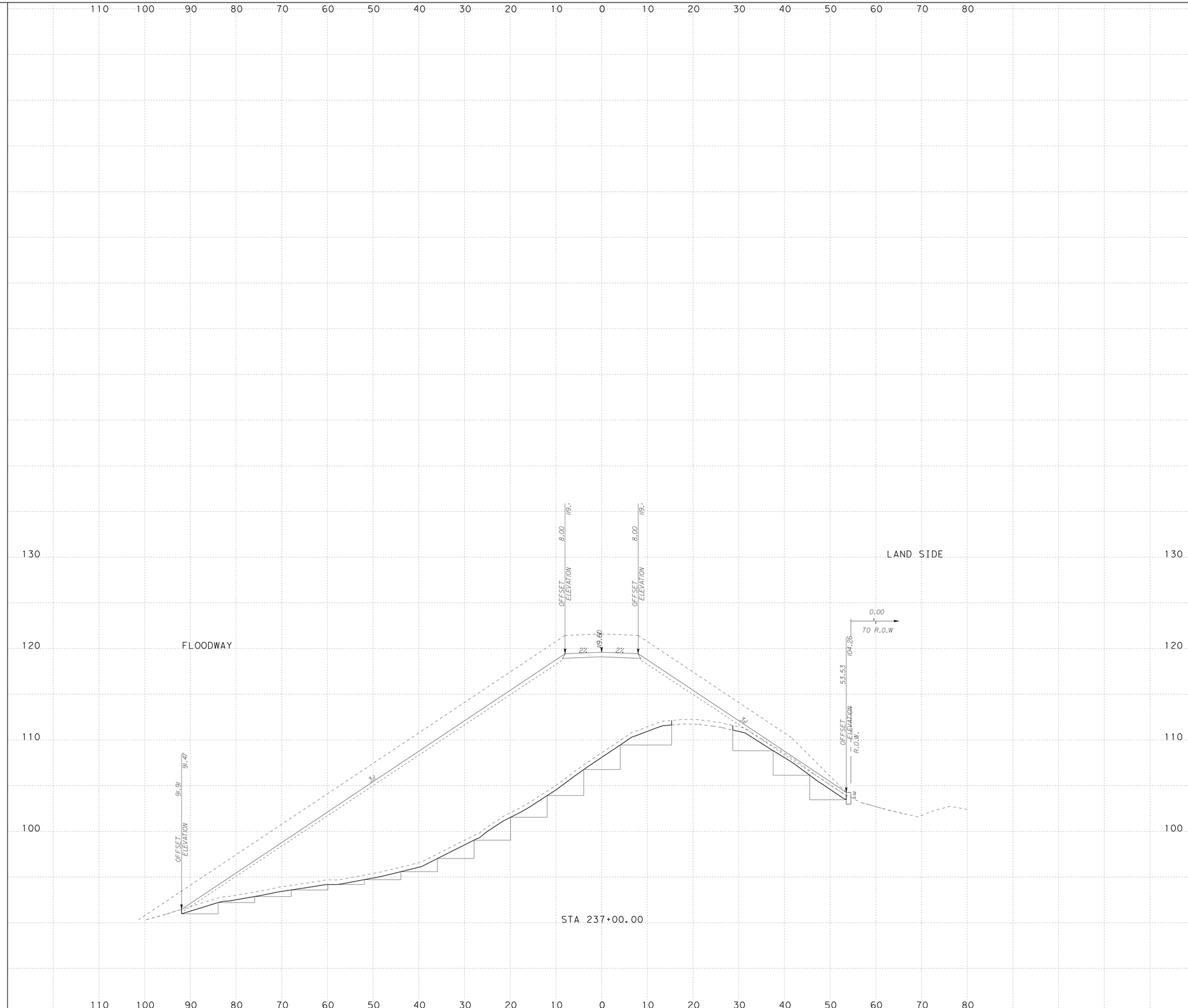

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Engineering Management Technology
S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED PROFESSIONAL ENGINEER

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PROP CROSS SECTIONS
HIDALGO PROTECTIVE LEVEE

SHEET 27 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9Z

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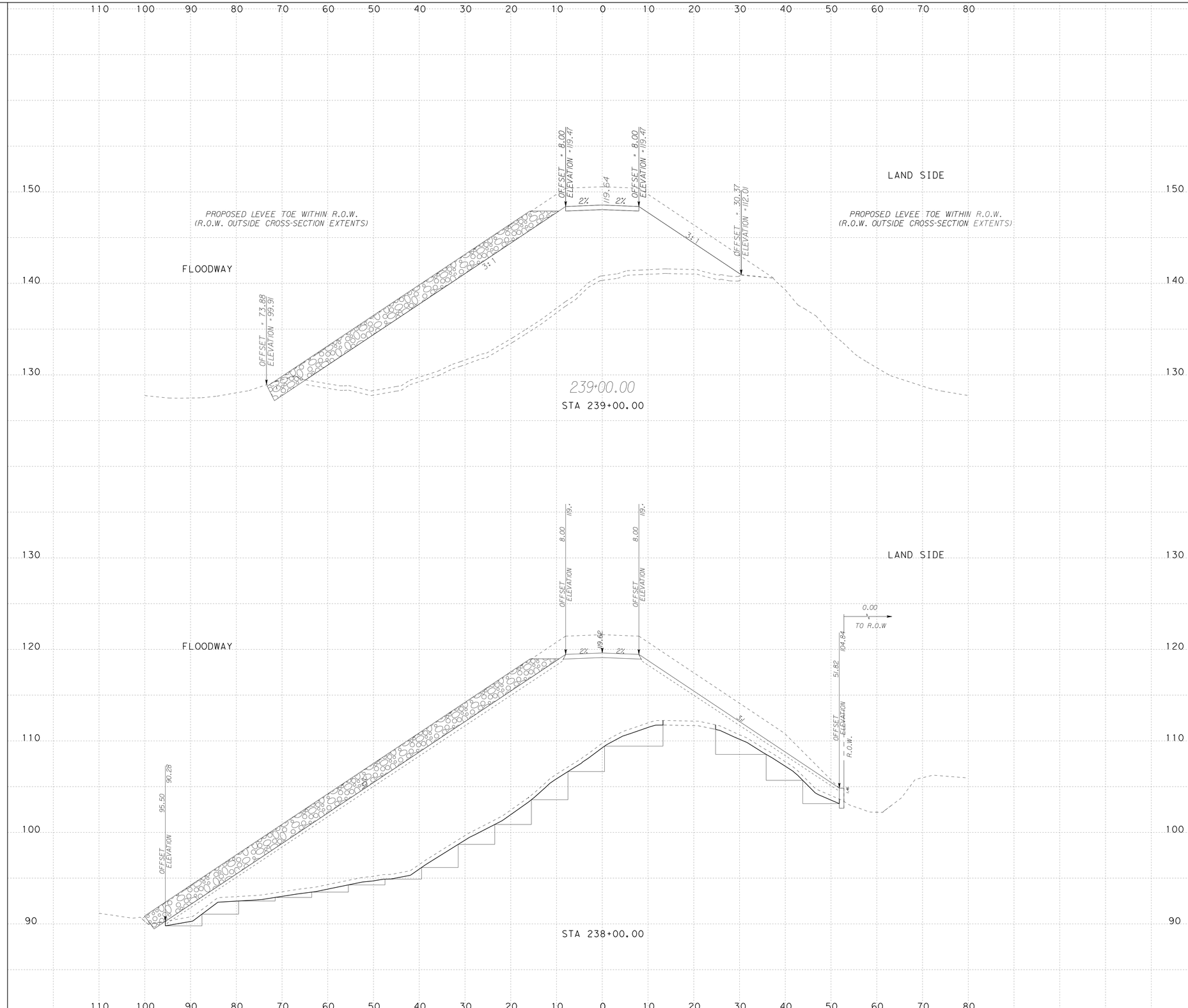

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Engineering Management Technology
S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED PROFESSIONAL ENGINEER

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PROP CROSS SECTIONS
HIDALGO PROTECTIVE LEVEE

SHEET 28 OF 28 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				9AA

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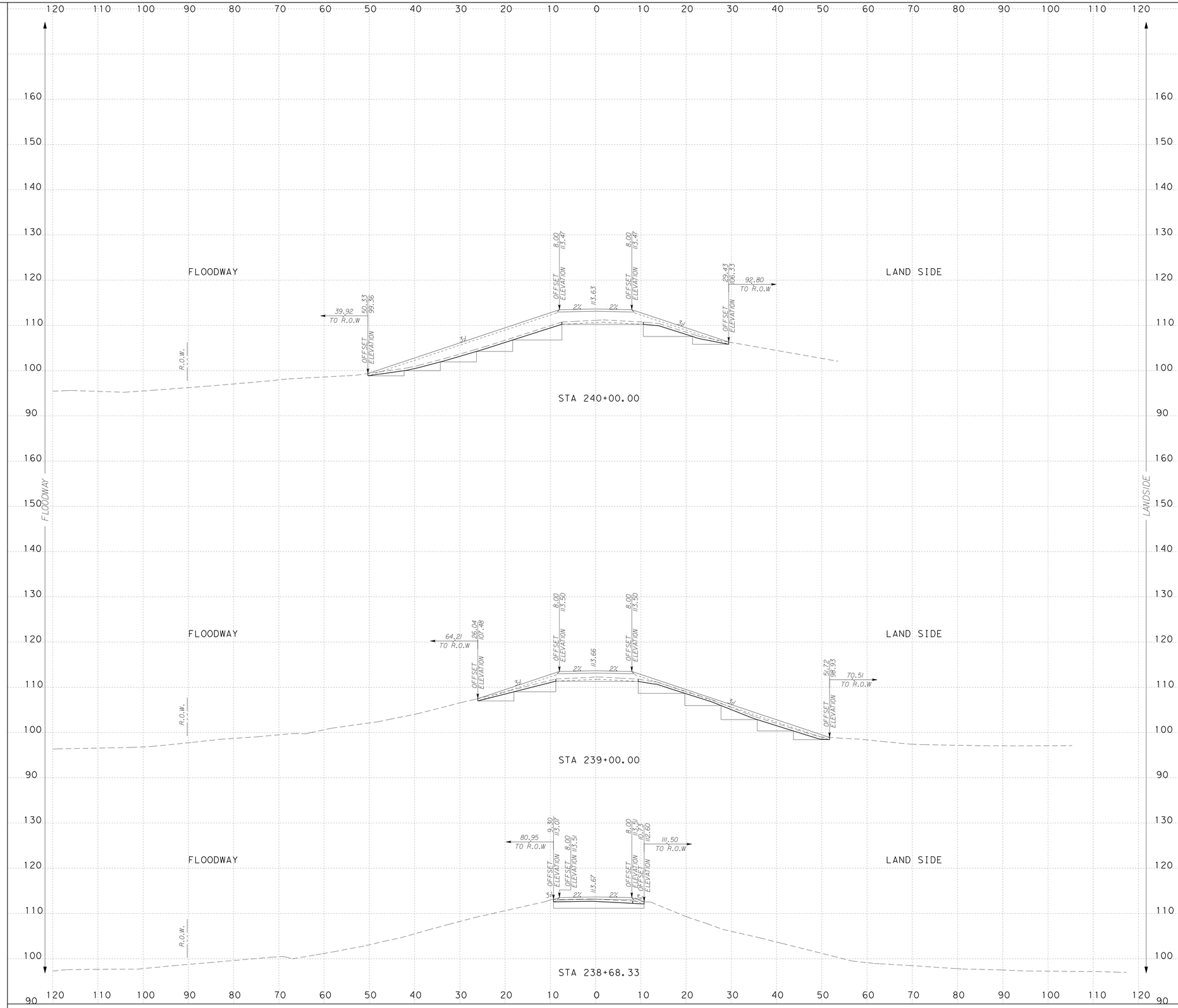

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S&B INFRASTRUCTURE, LTD.
Engineering Management Technology
S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by DANIEL GARCES P.E. 100029, on 8-12, 20 09.

P.E.

PROP CROSS SECTIONS
BANKER FLOODWAY SOUTH LEVEE

SHEET 1 OF 3 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO. IBM09T0018		SHEET NO.
REHABILITATION OF BANKER FLOODWAY SOUTH LEVEE				9BB

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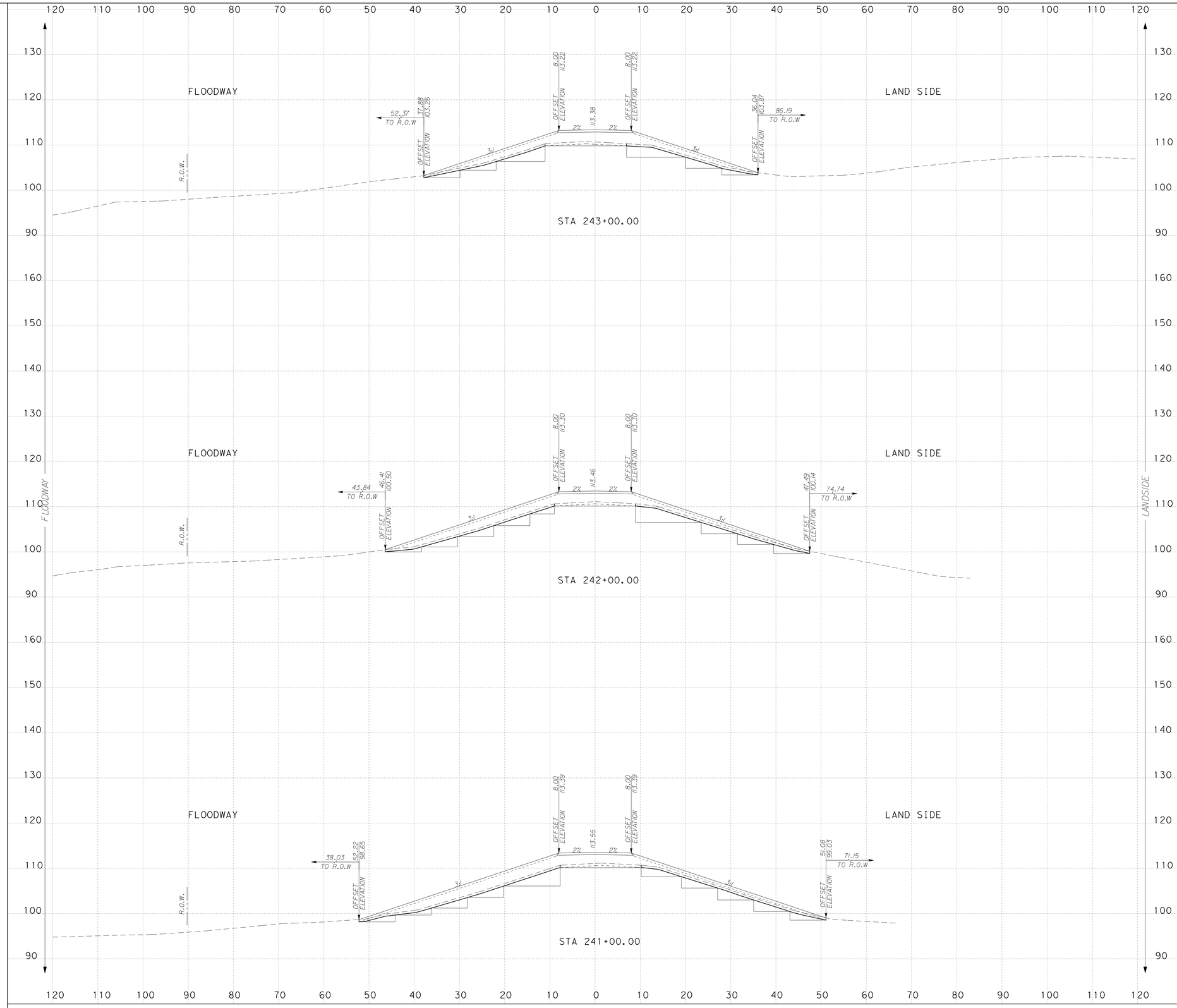

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V : 1"=10'

INTERNATIONAL BOUNDARY AND WATER COMMISSION
COMISION INTERNACIONAL DE LIMITES Y AGUAS

S&B INFRASTRUCTURE, LTD.
Engineering Management Technology

S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED
PROFESSIONAL ENGINEER

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PROP CROSS SECTIONS

BANKER FLOODWAY SOUTH LEVEE

SHEET 2 OF 3 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO.	IBM09T0018	SHEET NO.
REHABILITATION OF BANKER FLOODWAY SOUTH LEVEE				9CC

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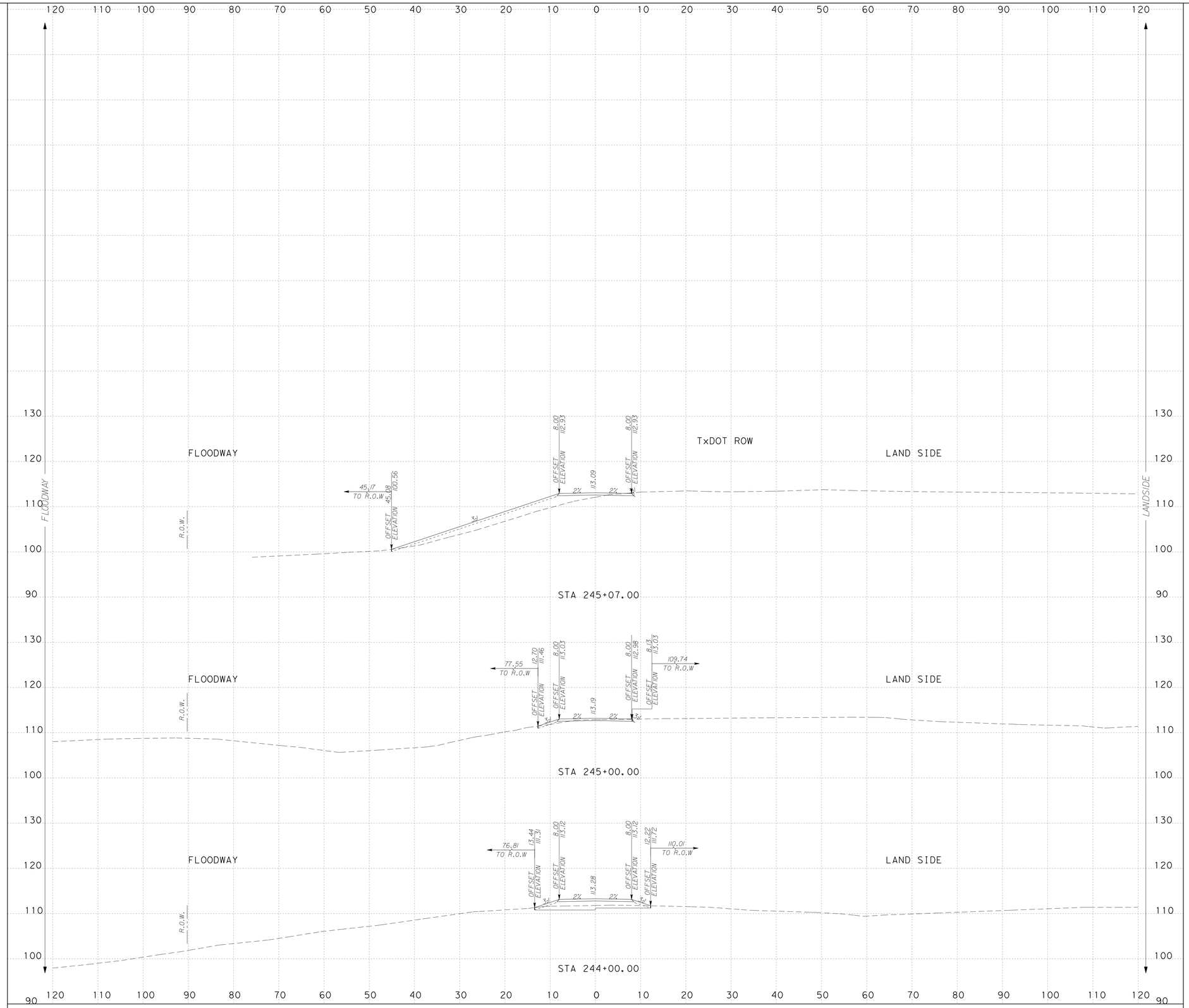

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S&B INFRASTRUCTURE, LTD.
Engineering Management Technology

S&B Infrastructure, Ltd. Firm Registration Number: 1582

STATE OF TEXAS
DANIEL GARCES
100029
LICENSED
PROFESSIONAL ENGINEER

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P.E.

PROP CROSS SECTIONS

BANKER FLOODWAY SOUTH LEVEE

SHEET 3 OF 3 SHEET

STATE	COUNTY	DRAWN BY:	CHECKED BY:	
TEXAS	HIDALGO	PROJECT NO. IBM09T0018		SHEET NO.
REHABILITATION OF BANKER FLOODWAY SOUTH LEVEE				9DD

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8/13/2009

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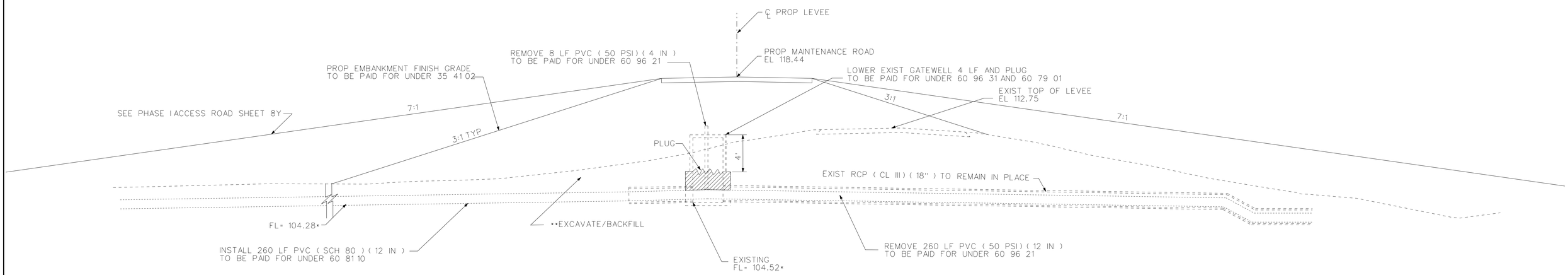
BID ITEM				UNIT	EST QTY	FINAL QTY
DIVISION NO.	ITEM No.	DESC CODE	DESCRIPTION			
60	79	01	ABANDON / PLUG STRUCTURE	CY	3	
60	81	10	PVC PIPE (SCH 80) (12 IN)	LF	260	
60	96	21	REMOVE STR (PVC)	LF	260	
60	96	31	REMOVE STR (LOWER GATEWELL)	LF	4	



STRUCTURE NO. 253AL
STA. 198+05

NOTE:
(1) CONTRACTOR TO FIELD VERIFY *.
(2) EXCAVATION AND BACKFILL OF STRUCTURES SHALL BE SUBSIDIARY TO VARIOUS BID ITEMS UNDER 35 41 AND 60 79 **
(3) EXISTING SLUICE GATE APPARATUS SHALL BE REMOVED AND BECOME THE PROPERTY OF GOVERNMENT, IF DETERMINED SALVAGEABLE BY COR. THIS SHALL BE CONSIDERED SUBSIDIARY TO BE ITEM 60 96 31.

STATE OF TEXAS
DARIO V. GUERRA III
64669
REGISTERED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by DARIO V. GUERRA III P.E. 64669, on 6/11, 2007.

SCALE : 1" = 5' H
SCALE : 1" = 5' V

S&R INFRASTRUCTURE, LTD.
ENGINEERING MANAGEMENT TECHNOLOGY
TEXAS PROFESSIONAL ENGINEERING FIRM REGISTRATION NO. 1582

INTERNATIONAL BOUNDARY AND WATER COMMISSION
COMISION INTERNACIONAL DE LIMITES Y AGUAS

STRUCTURE DETAILS
CROSS SECTION

STRUCTURE NO. 253AL

STATE	COUNTY	DRAWN BY: H.S.	CHECKED BY D.V.G.	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				10

7/20/2007
Dario Guerra
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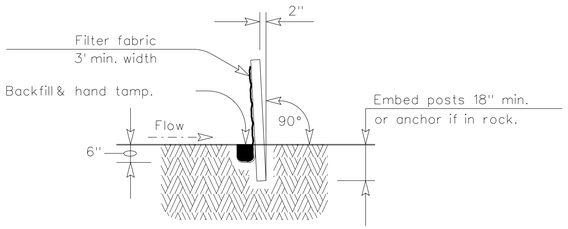


SECTION A-A

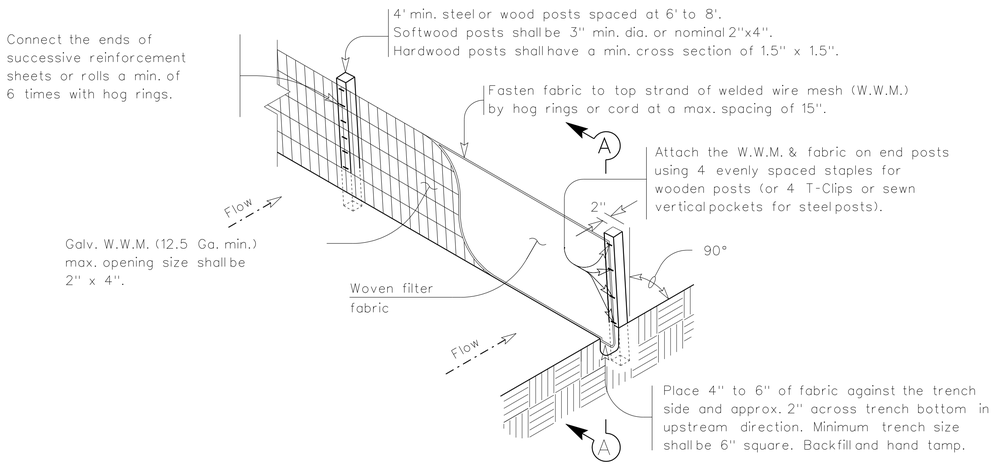
SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

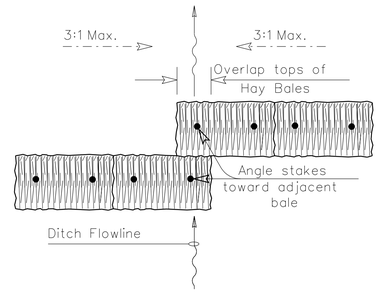
Sediment control fence should be sized to filter a max. flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

GENERAL NOTES

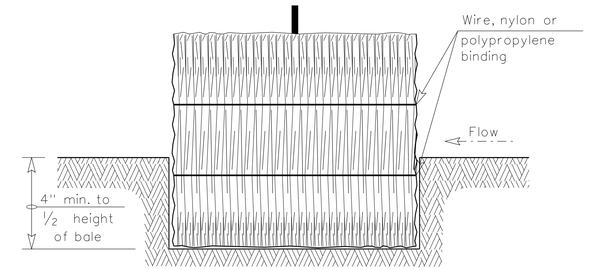
The guidelines shown hereon are suggestions only and may be modified by the Engineer.



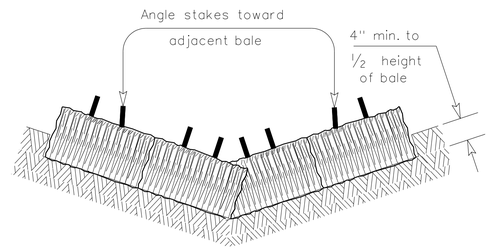
TEMPORARY SEDIMENT CONTROL FENCE



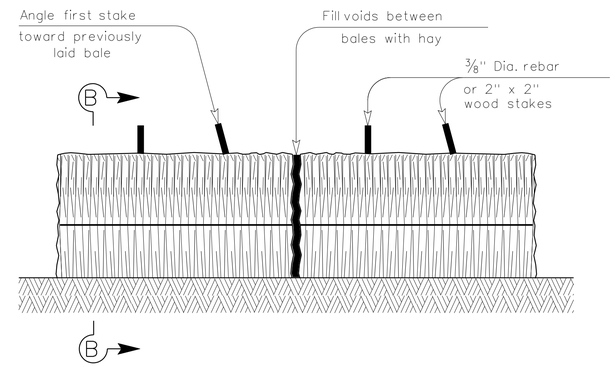
PLAN VIEW



SECTION B-B



PROFILE VIEW



BALED HAY FOR EROSION CONTROL

BALED HAY USAGE GUIDELINES

A Baled Hay installation may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A two year storm frequency may be used to calculate the flow rate to be filtered. The installation should be sized to filter a maximum flow thru rate of 5 GPM/FT^2 of cross sectional area. Baled hay may be used at the following locations:

1. Where the runoff approaching the baled hay flows over disturbed soil for less than 100'. If the slope of the disturbed soil exceeds 10%, the length of slope upstream the baled hay should be less than 50'.
2. Where the installation will be required for less than 3 months.
3. Where the contributing drainage area is less than ½ acre.

For Baled Hay installations in small ditches, the additional following considerations apply:

1. The ditch sideslopes should be graded as flat as possible to maximize the drainage flowrate thru the hay.
2. The ditch should be graded large enough to contain the overtopping drainage when sediment has filled to the top of the baled hay.

Bales should be replaced usually every 2 months or more often during wet weather when loss of structural integrity is accelerated.

GENERAL NOTES

1. Hay bales shall be a minimum of 30" in length and weigh a minimum of 50 Lbs.
2. Hay bales shall be bound by either wire or nylon or polypropylene string. The bales shall be composed entirely of vegetative matter.
3. Hay bales shall be embedded in the soil a minimum of 4" and where possible ½ the height of the bale.
4. Hay bales shall be placed in a row with ends tightly abutting the adjacent bales. The bales shall be placed with bindings parallel to the ground.
5. Hay bales shall be securely anchored in place with ⅜" Dia. rebar or 2" x 2" wood stakes, driven through the bales. The first stake shall be angled towards the previously laid bale to force the bales together.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

STATE OF TEXAS
MICHAEL C. RIOJAS
69690
REGISTERED PROFESSIONAL ENGINEER

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TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

TEMPORARY SEDIMENT CONTROL FENCE & BALED HAY

EC(1)-93 (MOD)

EC193.DGN	DRAWN BY: BGD	CHECKED BY: D.V.G.	
TXDOT JUNE 1993	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I			11

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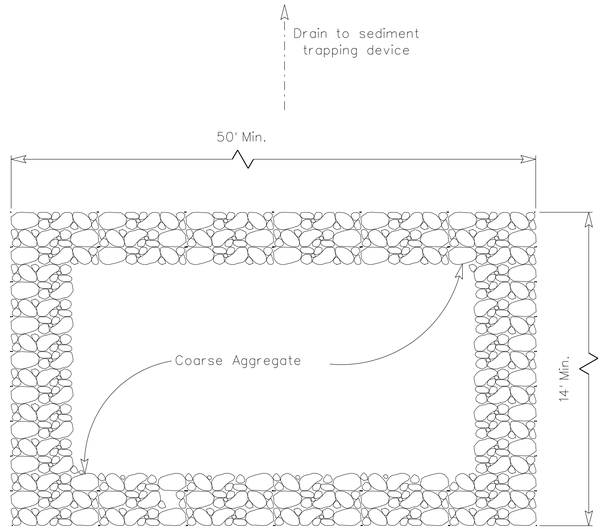
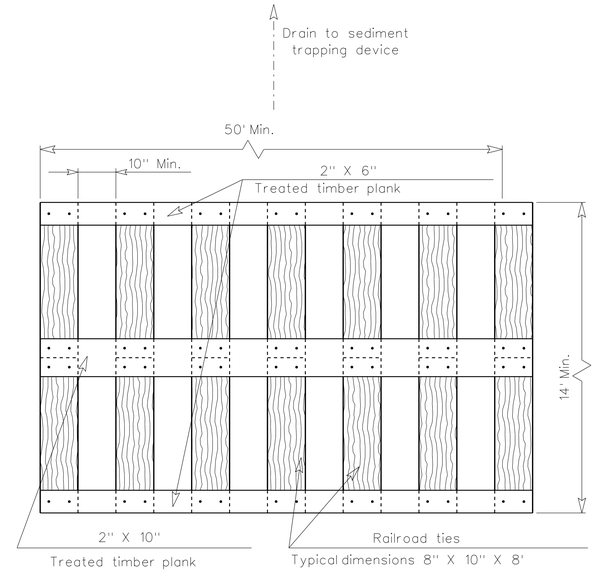


PLAN



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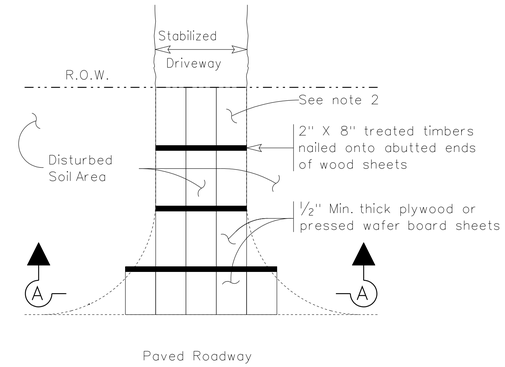

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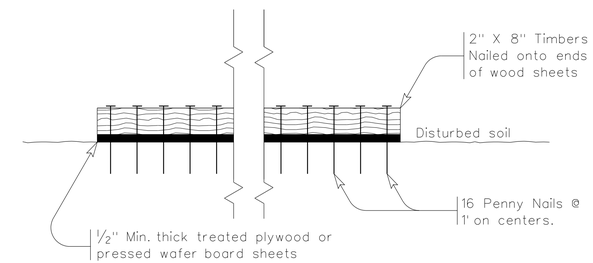
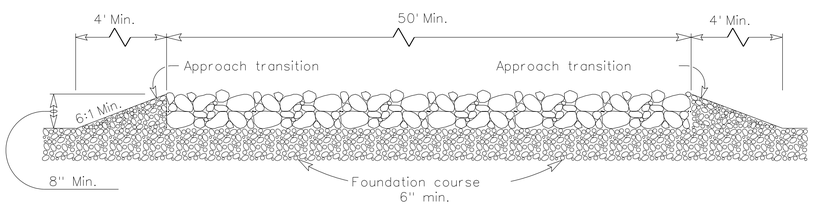


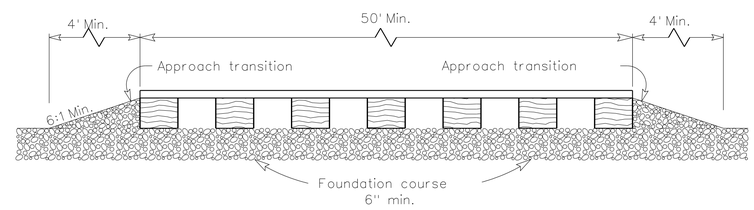
SECTION A-A

CONSTRUCTION EXIT (TYPE 3)



PROFILE

CONSTRUCTION EXIT (TYPE 1)



PROFILE

CONSTRUCTION EXIT (TYPE 2)

GENERAL NOTES

1. The length of the type 1 construction exit shall be not less than 50'.
2. The coarse aggregate should be open graded with a size of 4'' to 8''.
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

GENERAL NOTES

1. The length of the type 2 construction exit shall be not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with 1/2''x 6'' min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

GENERAL NOTES

1. The length of the type 3 construction exit shall be as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4'' thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

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Michael C. Riojas, P.E.

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TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)-93 (MOD)

EC193.DGN	DRAWN BY: BGD	CHECKED BY: D.V.G.	
TXDOT JUNE 1993	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I			11A

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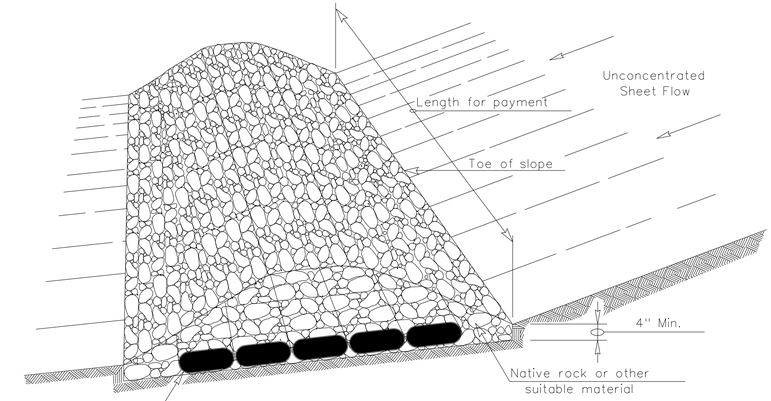
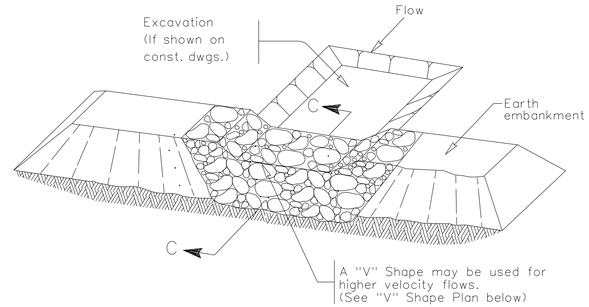


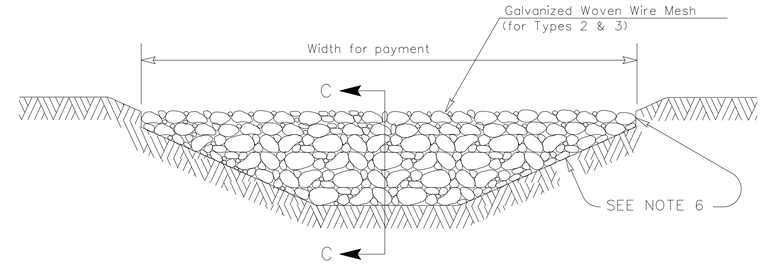
FILTER DAM AT TOE OF SLOPE

TYPE 1



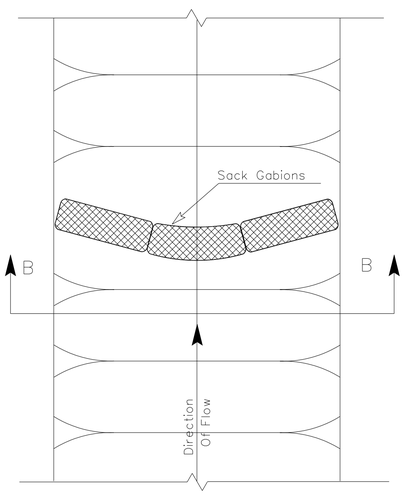
FILTER DAM AT SEDIMENT TRAP

TYPE 1 OR TYPE 2

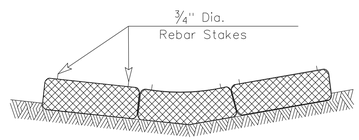


FILTER DAM AT CHANNEL SECTIONS

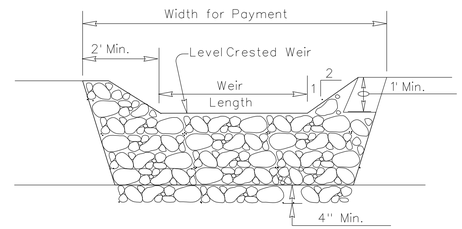
TYPE 1 OR TYPE 2



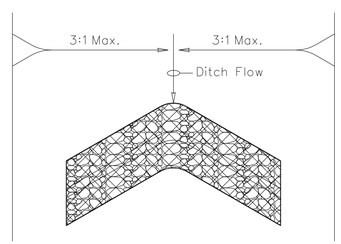
PLAN VIEW



SECTION B-B

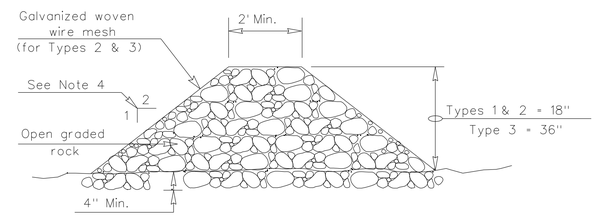


PROFILE



"V" SHAPE

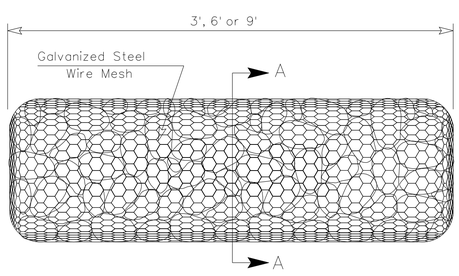
(Plan View)



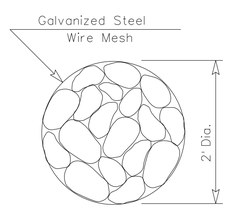
SECTION C-C

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as directed by the Engineer.
4. Side slopes should be 2:1 or flatter. Dams within the roadway safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. In stream use the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with 3/4" dia. rebar stakes.
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.



TYPE 4 (SACK GABIONS)



SECTION A-A

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approx. 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

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COMISION INTERNACIONAL DE LIMITES Y AGUAS

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

EC (2)-93 (MOD)

STATE	COUNTY	DRAWN BY: H.S.	CHECKED BY:O.V.G.	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				11B

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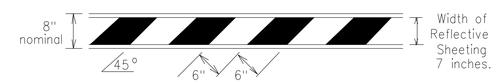
TYPE III BARRICADES

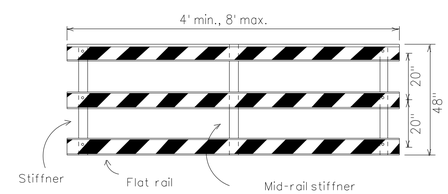
1. Type III Barricades shall be placed as shown in plans and/or directed by the Engineer.
2. Barricades extending across a roadway should have stripes that slopes downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade.
3. Striping of rails, for the right side of the roadway, should slope downward to the left side of the roadway, striping should slope downward to the right.
4. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
5. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
6. Warning lights shall NOT be installed on barricades.
7. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Rock, concrete, iron, steel or other solid object will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above level or hung with rope, wire, chains or other fasteners.
8. The three rails on Type III barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
9. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The sign should be a minimum of 10 feet behind Type III Barricades.

Barricades shall not be used as a sign support.

TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES



Stiffner may be inside or outside of support.

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TYPE III BARRICADE STANDARDS

STATE	COUNTY	DRAWN BY: D.A.I.	CHECKED BY S.L.T.	
TEXAS	HIDALGO	PROJECT NO.		SHEET NO.
REHABILITATION OF HIDALGO PROTECTIVE LEVEE PHASE I				11C

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